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ABSTRACT

This report is a preliminary exploration of teacher quality in the School District of Philadelphia. It examines three critical junctures in building a work force of quality teachers: teacher preparation, hiring and retention, and equitable distribution of quality teachers. The survey found that schools that serve the highest proportion of low-income, minority students typically have the least experienced faculty, the highest teacher-turnover rates, teachers with the lowest levels of formal educational qualification, and fewer teachers who are certified in their main teaching field. The findings also show that most teachers in the district are certified, but 93 percent of those teaching in the district's middle schools are certified only in elementary education. Subsequently, district middle-school teachers were more likely to have emergency certificates than were elementary and high-school teachers. The report recommends that schools of education develop middle-school certification programs and that the Philadelphia district collaborate with local colleges of education to provide professional development and on-the-job training to middle-school teachers. Other recommendations address the supply and demand of teachers, hiring and recruitment, teacher retention, and teacher experience. Overall, the recommendations highlight the need for ongoing research to track teacher-quality indicators in the district. Appended are: Hierarchical Lineal Modeling and Multiple Regression Analysis; and Comparison of Philadelphia/Suburban Average Teacher Salaries, Pennsylvania Department of Education Professional Personnel Report, 1999-2000. (Contains 11 tables and 3 figures.) (RJM)

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# Recruiting and Retaining Teachers: Keys to Improving the Philadelphia Public Schools

by Susan Watson

with research assistance from Ellen Foley, Erin Tighe, and Aubrey Wang

May 2001

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# ABOUT THE CHILDREN ACHIEVING CHALLENGE

In February 1995 shortly after the School Board of Philadelphia adopted *Children Achieving* as a systemic reform agenda to improve the Philadelphia public schools, the Annenberg Foundation designated Philadelphia as one of a few American cities to receive a five-year $50 million Annenberg Challenge grant to improve public education.

Among the conditions for receiving the grant was a requirement to raise two matching dollars ($100 million over five years) for each one received from the Annenberg Foundation and to create an independent management structure to provide program, fiscal, and evaluation oversight of the grant. In Philadelphia, a business organization, Greater Philadelphia First, assumed this responsibility, and with it, the challenge of building and sustaining civic support for the improvement of public education in the city.

Philadelphia's *Children Achieving* was a sweeping systemic reform initiative. Systemic reform eschews a school-by-school approach to reform and relies on coherent policy, improved coordination of resources and services, content and performance standards, decentralization of decision-making, and accountability mechanisms to transform entire school systems. Led by a dynamic superintendent and central office personnel, *Children Achieving* was the first attempt by an urban district to test systemic reform in practice.

# EVALUATION OF CHILDREN ACHIEVING

In 1996 the Consortium for Policy Research in Education (CPRE) at the University of Pennsylvania and its partner, Research for Action (RFA) were charged by the *Children Achieving* Challenge with the evaluation of *Children Achieving*. Between the 1995-1996 and 2000-2001 school years, CPRE and RFA researchers interviewed hundreds of teachers, principals, parents, students, district officials, and civic leaders; sat in on meetings where the plan was designed, debated, and revised; observed its implementation in classrooms and schools; conducted two system-wide surveys of teachers; and carried out independent analyses of the District's test results and other indicators of system performance. An outline of the research methods used by CPRE and RFA is included in this report. A listing of the reports on *Children Achieving* currently available from CPRE is found below. There will be several additional reports released in the coming months. New reports will be listed and available as they are released on the CPRE web site at www.gse.upenn.edu/cpre/.

# CHILDREN ACHIEVING'S THEORY OF ACTION

To assess the progress and effects of a comprehensive reform such as *Children Achieving*, it is essential to understand its "theory of action," that is, the assumptions made about what actions or behaviors will produce the desired effects. A summary of the *Children Achieving* theory of action follows:

> *Given high academic standards and strong incentives to focus their efforts and resources; more control over school resource allocations, organization, policies, and programs; adequate funding and resources; more hands-on leadership and high-quality support; better coordination of resources and programs; schools restructured to support good teaching and encourage improvement of practice; rich professional development of their own choosing; and increased public understanding and support; the teachers and administrators of the Philadelphia schools will develop, adopt, or adapt instructional technologies and patterns of behavior that will help all children reach the District's high standards.*

# ADDITIONAL READING ON CHILDREN ACHIEVING

The following publications on the evaluation of the *Children Achieving* are currently available through CPRE at (215) 573-0700.

- Recruiting and Retaining Teachers: Keys to Improving the Philadelphia Public Schools (May 2001)
- School Leadership and Reform: Case Studies of Philadelphia Principals (May 2001)

# CHILDREN ACHIEVING EVALUATION 1995-2001: RESEARCH METHODS

During the past five years, the Consortium for Policy Research in Education and Research for Action used the research methods indicated below in their evaluation of the *Children Achieving* Challenge.

1) 1996-2000 school-level data on indicators that made up the District's Performance Responsibility Index including student scores on the SAT-9, student promotion and graduation rates, student attendance, and teacher attendance.

2) Two census surveys of teachers, the first in 1997 and the second in 1999. Teachers were asked about reform implementation, school conditions, and teaching practices. There was a greater than 60 percent response rate on both surveys.

3) School indicators describing teacher and student characteristics in 1996 and 1999 obtained from the School District of Philadelphia's Information Services. These data included school enrollment, number of teachers, the proportion of students qualifying for free or reduced price lunch, among other indicators. These data were used for descriptive purposes and in hierarchical linear and logistic regression models to help understand the relationships among reform implementation, student outcomes, and school characteristics.

4) Five years (1995-1996 through 1999-2000) of qualitative research in 49 schools (26 elementary, 11 middle, and 12 high schools) in 14 clusters. Qualitative research included: interviews of teachers, principals, parents, outside partners who worked in the schools, and in a few cases, students; observations of classrooms, SLC meetings, professional development sessions, and school leadership team meetings; and review of school documents (School Improvement Plan, budget, etc.). Intensive, multi-year case study research in a subset of 25 schools (13 elementary, 5 middle, and 7 high schools).

5) Interviews of central office and cluster staff and observations of meetings and other events.

6) Interviews of 40 Philadelphia civic leaders (included political leaders, leaders in the funding community, public education advocates, journalists, and business leaders).

In addition, numerous other studies conducted during *Children Achieving* informed this evaluation. These included: Bruce Wilson and Dick Corbett's three-year interview study of middle school students; an evaluation of the Philadelphia Urban Systemic Initiative in Mathematics and Science conducted by Research for Action; the Philadelphia Education Longitudinal Study conducted by Frank Furstenberg at the University of Pennsylvania; and the evaluation of the William Penn Foundation's initiative in two clusters conducted by the National Center for Restructuring Education, Schools, and Teaching.

# BACKGROUND

In 1995, the School District of Philadelphia embarked upon an ambitious program of standards-based reform called *Children Achieving*. Fundamental to this effort has been the assumption that all children can achieve at high levels if provided with the necessary opportunities for learning. Toward this end, the District has implemented a range of initiatives to ensure that all children have equal access to the kinds of resources and conditions that offer children essential opportunities to learn. This report examines teacher quality, an important dimension of equal educational opportunity.[1]

Numerous reports in the past decade have underscored the link between student achievement and teacher quality. Teacher quality has been identified as an important predictor of school success. The School District of Philadelphia, like other large urban districts in the United States, faces serious challenges in recruiting and retaining quality teachers. The causes are complex and interrelated. *Quality Counts 1998*, a special report of *Education Week*, states: "Teachers in high-poverty secondary schools, whether urban or rural, are the least prepared and the most likely to lack even a minor in the subjects they teach. Such schools also tend to have a larger share of new, inexperienced teachers and a tougher time hiring and filling teaching vacancies, especially in such sought-after fields as biology, mathematics, bilingual education, and special education." The report further notes, "Not enough college students want to teach in big cities, and few education schools focus on preparing teachers for urban classroom[s]."[2]

The challenge for the School District of Philadelphia is more than simply providing a teacher for every classroom. The district must also ensure that teachers have the training and skills for the field and grade level they teach in order to meet the specific learning needs of their students. Creating and maintaining teacher quality requires a multi-dimensional approach. The factors that contribute to the teacher quality across a system are not the same as those that foster quality in individual teachers.

This report examines three critical junctures in building a workforce of quality teachers: teacher preparation, hiring and retention, and equitable distribution of quality teachers. Our research reveals the need for continued improvement in all three areas:

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[1] Between the time this report was drafted and its publication, the School District of Philadelphia and the Philadelphia Federation of Teachers reached agreement on a new teachers' contract. Signed in the fall of 2000, this contract addressed some of the issues raised by the author. These changes in policy are noted in the text of the report.

[2] Education Week, *Quality counts 1998*. Available on the world wide web at http://www.edweek.org/sreports/qc98/challenges/teach/te-n.htm

- **The gateways to teaching careers.** Researchers have shown a relationship between the quality of teacher preparation and teacher effectiveness. It is vital that the Commonwealth of Pennsylvania and the School District of Philadelphia set high standards for entry into the profession — standards that accurately and fairly measure the quality indictors that researchers have linked to teacher effectiveness. Research further suggests that improving teacher qualifications and raising entry standards for the profession may help to raise teacher quality overall. As more highly qualified teachers teach the grade levels and subjects for which they have trained, student achievement rises, job satisfaction increases, and teacher turnover declines, creating a more favorable environment attractive to new teachers.

- **The ability to recruit and retain quality teachers.** Research indicates that many newly trained teachers would prefer to work in urban districts, but the recruitment process, often protracted and frustrating, discourages them.[3] In response, a number of districts are adopting innovative strategies to attract new teachers, streamlining the efficiency of the recruitment process, and offering candidates greater choice about where they teach. Philadelphia has undertaken a range of new recruitment initiatives. However, to attract the best teachers, the District needs to expand these efforts and monitor the effectiveness of the initiatives in place. The District must also strengthen ways of retaining those already teaching in its schools. Ingersoll[4] has argued, "Teacher recruitment programs — the dominant approach to addressing school staffing inadequacies — will not solve the staffing problems of schools if they do not also address the problem of teacher retention." Our analysis supports this conclusion and shows that teacher turnover is a significant problem in Philadelphia because of the instability it creates in schools and because of the way it exacerbates, and may be largely responsible for, the teacher shortage.

- **Addressing the unequal distribution of quality teachers.** Teacher quality — as measured by certification status, qualifications, and years of experience — is unequally distributed across the School District of Philadelphia. Our analysis confirms the findings of other studies: poor and minority students are the least likely to be taught by experienced, well-qualified teachers. Poor and minority students are also more likely to attend schools with the highest teacher turnover. Low-achieving students should have equal, if not greater, access to quality teachers. Because achievement is lowest among poor and minority students, the unequal distribution of quality teachers seriously undermines the effectiveness of the District's reform efforts.

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[3] National Commission on Teaching & America's Future, *What matters most: Teaching for America's future*. New York: Author, 1996.

[4] R. Ingersoll, *Turnover among mathematics and science teachers in the U.S.* Washington DC: National Commission on Mathematics and Science Teaching for the 21st Century, 1999, p. 1. Available on the world wide web at www.ed.gov/inits/Math/glenn/compapers.html

Improving teacher quality requires a coordinated approach in which the various stakeholders work together to address specific issues. As the District increasingly holds students, teachers, and schools accountable for their achievement, we believe the district must hold itself accountable for the quality and equitable distribution of learning opportunities, in which teacher quality is so crucial. We hope that the information presented in this report will assist policymakers and district and school administrators in developing interventions that will improve teacher quality in all schools, for all students.

## AUTHOR'S NOTE

Between the time this report was drafted and its publication, the School District of Philadelphia and the Philadelphia Federation of Teachers reached agreement on a new teachers' contract. Signed in the fall of 2000, this contract addressed some of the issues raised by the author. These changes in policy are noted in the text of the report.

## SOURCES OF DATA FOR THIS REPORT

This report is a preliminary exploration of teacher quality in the School District of Philadelphia. We have drawn primarily on responses to the Consortium for Policy Research in Education (CPRE) teacher survey administered in June 1999 for data representing three primary indicators of teacher quality — certification, job qualifications, and years of experience.

In exploring each of these variables, we have used three main data sources:

- results of a June 1999 survey of Philadelphia public school teachers;
- research data on various aspects of teacher quality provided by the District and from other Philadelphia studies; and
- qualitative and quantitative data from Pennsylvania and national studies.

Comparing different indicators of teacher quality across studies is difficult because there are so many ways to measure these indicators. Still, we present the findings of some larger and recent national studies to provide a broader context for the research on teacher quality in Philadelphia.

We have tried to make maximum use of the limited data available on teachers in the School District of Philadelphia. Indeed, this report highlights the need for ongoing research to monitor teacher quality in the District.

## ACKNOWLEDGEMENTS

The evaluation team gratefully acknowledges the cooperation of the School District of Philadelphia in providing information and statistical data, and the assistance of Elizabeth Useem, Director of Research and Evaluation at the Philadelphia Education Fund, for her research and feedback on earlier drafts of this report.

# EXECUTIVE SUMMARY

## OUR RESEARCH FINDINGS

We have been compelled to look in various directions to grapple with the following questions: What constitutes teacher quality and how does the School District of Philadelphia measure up? How likely are students in high-poverty neighborhoods to be taught by the District's best teachers? How much progress has the District made in recruiting and retaining top-quality educators?

One of the most significant findings of our research is that schools serving the highest proportion of low-income, minority students typically have:

- the least experienced faculty;
- the highest teacher turnover rates;
- teachers with the lowest levels of formal educational qualification; and
- fewer teachers who are certified in their main teaching field.

This pattern holds especially true for middle schools with significant numbers of low-income, minority students: teachers in these schools rank lowest on these indicators of teacher quality. If these indicators are related to teacher effectiveness and student achievement, as demonstrated by a number of researchers, then this finding is reason for serious concern. It means that low-income, minority students are *least* likely to have access to the most effective teachers, as measured by these indicators.

Valid reasons may exist that account for the statistical relationships between teacher qualifications and experience and the various school-level factors. However, in light of the importance of teacher quality to student achievement, our analysis supports the broad conclusion that the District needs to take concerted action to ensure that it attracts and retains the most qualified teachers available and uses every means possible to see that they are more evenly distributed among schools.

## KEY FINDINGS AND RECOMMENDATIONS

In addition to our findings based on the CPRE teacher survey, we have included in this report supplemental findings from other relevant research. This has enabled us to develop a more comprehensive picture of teacher quality issues in the District. We summarize below the key findings from our research and other studies, followed by recommendations based on the research findings.

## TEACHER CERTIFICATION

### Findings

- Most teachers in the School District of Philadelphia are certified.
- Ninety-three percent of those teaching in District middle schools are certified only in elementary education which, under Pennsylvania regulations, means they were not trained to teach beyond the sixth grade.
- The Pennsylvania Department of Education allows middle schools to employ elementary-certified teachers which, by definition, leads to misassignment on the basis of the mismatch between a teacher's training and teaching assignment.
- District middle school teachers are more likely to have emergency certificates than elementary and high school teachers.
- Eight percent of District elementary teachers are emergency certified or certified in a field other than their main teaching field.
- The District's misassignment rate for elementary teachers (eight percent) is notably higher than the Pennsylvania average (one percent).
- Four percent of high school teachers in the District are emergency certified or certified in a field other than their main teaching field.
- Statewide data for Pennsylvania shows that misassignment rates are higher for teachers in their minor teaching subjects than in their major teaching subjects. We do not have similar data for the School District of Philadelphia, but the statewide data suggest that misassignment rates are likely to be high.
- National data indicate widespread out-of-field teaching, including seventh through twelfth grade teachers who do not have certificates in their main teaching subject, and teachers who had neither a college major or minor in the field they are teaching.
- National data show that schools with the highest percentages of low-income and minority students are more likely to have teachers who are teaching out-of-field.

### Recommendations

- College and schools of education should develop middle school certification programs.
- The School District of Philadelphia should collaborate with local colleges of education to provide professional development and on-the-job training to middle school teachers who are certified in elementary education or emergency certified.
- Factors contributing to teacher misassignment that are the responsibility of the District, as well as factors under school control, need to be explored.
- The District should collect data on the rate of misassignment and out-of-field teaching for individual schools and the District as a whole. The District should monitor this information on an ongoing basis and make it available to the schools and the public.
- The District should provide principals with training on the importance of in-field teaching and in management strategies to reduce misassignment and out-of-field teaching in their schools.

## TEACHER SUPPLY AND DEMAND

### Findings

- The School District of Philadelphia has a teacher shortage and high demand for teachers in the following areas: special education, mathematics, science, English as a second language, early childhood education, elementary education, bilingual education, and substitute teachers.
- The District has a shortage of minority teachers. The current ratio is one minority teacher for every 2.2 minority students. The District ratio is the same as the average for central city schools nationally, according to 1993-1994 SASS data.
- The overall number of teachers certified in Pennsylvania far exceeds the number required to staff the schools. A total of 24,000 teaching certificates were issued to graduates of 90 Pennsylvania colleges in 1996. The School District of Philadelphia needs to employ about 13,000 teachers over a nine-year period, so the problem is not a lack of supply, but a lack of willingness of new graduates to teach in District schools.
- There is a shortage, however, of teachers specifically trained to teach in middle schools. Only three of 19 local institutions offer middle school teacher preparation programs.
- Teacher turnover is a significant factor contributing to the teacher shortage in Philadelphia.

### Recommendations

- Colleges should do more to prepare students to teach in urban settings and to offer flexible scheduling and alternative routes to licensure.
- Colleges need to actively recruit teachers of color.
- The District should implement strategies that support new teachers in the early years of their careers. This should reduce teacher turnover and have a significant impact on reducing the teacher shortage. [Note: The Philadelphia teachers' contract signed in the fall of 2000 allows for new teachers to stay in the same school for three years, which partly addresses this issue raised by the author.]

## HIRING AND RECRUITMENT

### Findings

- The District has difficulty attracting teachers in particular subject areas, teachers who perform well on state teacher licensing exams, and teachers from colleges whose graduates typically score well on these exams. Starting salaries for teachers in Philadelphia public schools are about $30,000 per year, significantly less than the average annual salary of $34,000 for beginning teachers in suburban districts. Average Philadelphia teacher salaries are $1,872 lower than the average Pennsylvania teacher.

- 1997-1999 surveys of teachers newly hired by the District indicated that they found the hiring process protracted, frustrating, and unprofessional.
- Late notice of teacher resignations makes recruitment difficult. In 1999, a total of 656 teachers resigned from the District between July 1 and September 30; an additional 482 teachers resigned between October 1 and the end of December. These late resignations (nearly one of 10 teachers in the system) forced the District to hire teachers who had little or no time to prepare for teaching and imposed a change of teacher on many students in the first quarter of the year. [Note: The new teachers' contract signed in the fall of 2000 provides benefits for teachers who give notification of retirement by April 15, which partly addresses this issue raised by the author.]
- Changes in hiring and recruitment practices implemented by the District since 1997 onward are having a positive impact.
- The 1999 hiring bonus and relaxation from one to three years of the Philadelphia residency requirement have been important factors in attracting teachers.
- Lifestyle factors are important in attracting college graduates to work in Philadelphia.

### Recommendations

- The District should continue to modernize and expedite its hiring process.
- The District should eliminate the residency requirement for teachers.
- The District should allow teacher candidates and principals greater choice in teaching assignments.
- The District should raise starting salaries to be more comparable with suburban districts.
- District recruiters should emphasize the lifestyle advantages and professional benefits of living and working in Philadelphia.
- The District should create incentives for teachers to give notice of their resignations before the end of June to allow adequate time to hire replacements for the next school year. [Note: The new teachers' contract signed in the fall of 2000 provides benefits for teachers who give notification of retirement by April 15, which partly addresses this issue raised by the author.]

## TEACHER RETENTION

### Findings

- New teachers (1997) lacked basic information about District and school policies. Many never saw their assigned mentors or did not have mentors.
- Newly hired middle school teachers (2000) said that the residency requirement for teachers and other municipal employees would discourage them from continuing to teach in the District, even if a three-year extension were provided. New middle school teachers said student behavior, discipline issues, and salary were the main reasons they would stop teaching in the District.

- Teachers appointed after September 1 are "special assignment" teachers who, unless there is a place for them in their schools, must leave at the end of the school year, thereby compounding the District's teacher turnover problem.
- Teacher turnover contributes to the teacher shortage. We do not know the attrition rates for beginning teachers in the District, but, nationally, 29 percent of all beginning teachers leave teaching after three years, and 39 percent leave after five years.
- School-level factors — including student discipline problems, lack of faculty input into decision-making, and low salaries — have an impact on teacher turnover nationally.

**Recommendations**

- The District should document, by school, the attrition rate for beginning teachers and explore the reasons behind attrition.
- The District should provide extra support to teachers and students in schools with discipline problems, and increase teacher decision-making authority at the school level.
- The District should train school administrators to welcome and support new teachers.

## TEACHER QUALIFICATIONS

**Findings**

- Teachers hired by the School District of Philadelphia between 1987 and 1996 had among the lowest scores of the 16 metropolitan areas in Pennsylvania on the National Teacher Exam.
- Approximately 76 percent of Philadelphia public school teachers have master's degrees, notably higher than the national average of 45 percent.
- High school teachers (83 percent) are the most likely teachers in the District to have master's degrees.
- We have no data on whether District teachers have master's degrees in their main teaching field or, in the case of subject specialists, in their main teaching subject.
- District schools with the highest proportion of low-income and minority students have the lowest percentage of teachers with master's or higher degrees.
- District schools having a higher proportion of teachers with master's degrees were more likely to have higher student achievement, fewer security problems, fewer instructional obstacles, and more distributed leadership.

**Recommendations**

- The District should encourage its teachers to earn additional qualifications in their main teaching fields.

- The District should provide training for principals so they can recognize the importance of in-field teaching and can learn management strategies to reduce out-of-field teaching in their schools.
- The District and the Philadelphia Federation of Teachers should explore ways of ensuring more even distribution of the more highly-qualified teachers among schools.

## TEACHER EXPERIENCE

### Findings

- Nearly half (48 percent) of the respondents to the 1998-1999 CPRE teacher survey had taught five or fewer years at their current schools; 21 percent had taught a total of five or fewer years.
- Forty-six percent of District teachers responding to the CPRE survey had more than 20 years of teaching experience, compared with 31 percent of teachers nationally.
- High school teachers were the most experienced teachers in the District: 61 percent had taught for more than 20 years. Forty-five percent of elementary school teachers and 28 percent of middle school teachers had taught for more than 20 years.
- Middle schools had the highest percentage of first-year teachers. Almost one in five middle school teachers said they were new to their schools in the 1998-1999 school year. Middle school teachers were also the most likely to have taught a total of five or fewer years and to have been teaching in their current schools for five or fewer years.
- Students enrolled in District schools with the highest percentages of low-income and minority students were most likely to be taught by teachers who were teaching for the first time, or had five or fewer years of total teaching experience. These students were least likely to be taught by teachers with more than 20 years of total teaching experience.
- A District study shows that, over a four-year period, 38 percent of teachers were new to their schools. There was a wide variation among schools in the proportion of teachers new to the schools: from six to 83 percent in elementary schools, 13 to 61 percent in middle schools, and 22 to 64 percent in high schools. Some schools had extraordinarily high levels of teacher turnover each year.
- District teachers with more than ten years of teaching experience were likely to work in safer schools with fewer instructional obstacles and more distributed leadership.
- A District analysis of teacher transfers shows that teachers tend to leave schools where students are not performing well and which serve greater proportions of minority students. This pattern was similar for both voluntary and involuntary transfers, which suggests that the District's transfer policies directly or indirectly exacerbate the unequal distribution of teachers.

**Recommendations**

- The District should establish a stakeholder taskforce to identify schools with the highest levels of teacher turnover and the least experienced faculty, to examine the reasons for the high turnover, and to develop interventions to address the situation as soon as possible.
- The District should establish minimum school staffing standards, including indicators such as certification status, teacher qualifications, teacher assignments, and teacher turnover. The District and schools should monitor their status in relation to these standards on an annual basis. If a school falls below the minimum standards, the District should implement a series of interventions, including paying bonuses to encourage more experienced and qualified teachers to transfer to these schools.

## SUMMARY

Overall, our recommendations highlight the need for ongoing research to track teacher quality indicators in the District and to explore in depth the processes that influence teacher quality and distribution. These processes are complex and affected by national, state, district, and school policies. Furthermore, policies and practices at every stage of the teacher pipeline — from training through hiring, assignment, and transfer — affect teacher quality. The challenge for future research is to identify policies and practices that can enhance teacher quality, and to provide empirical evidence that supports policymakers at different levels in developing and implementing the policy changes needed.

The School District of Philadelphia has already implemented several strategies designed to improve teacher quality, but we believe the District should do more. In the current high-stakes, standards-based environment, it is vitally important that all students have access to the learning opportunities that effective teachers provide. If the quality indicators discussed in this report are, as researchers have shown, linked to teacher effectiveness and student achievement, then the District should develop and adopt policies that improve teacher quality. Furthermore, teachers need opportunities to become fully prepared to meet the demands of standards-based instruction, and to provide the effective teaching that students need and are entitled to receive.

# THE GROWING CONCERN ABOUT TEACHER QUALITY

As states and school districts mobilize their resources in response to the demand for education reform, there is a growing recognition that teacher quality is a crucial ingredient in educational achievement. Access to quality teaching is being re-framed as an opportunity-to-learn issue in the current high-stakes, standards-based environment, with its heightened focus on student performance.

Policymakers and education leaders developing and implementing ambitious education reforms are pressuring teachers to change the ways they teach. Institutions that prepare teachers also face increased pressure to graduate teachers with the content knowledge and pedagogical skills they need to help all children achieve.

Philadelphia's *Children Achieving* reform initiative makes very specific demands on teachers. This standards-based reform is based on four key elements:

- setting high standards;
- teaching students to achieve those standards;
- motivating children to achieve; and
- measuring students' progress toward the standards.[5]

As noted in the second-year evaluation report on the *Children Achieving* initiative, *Children Achieving* does not prescribe specific teaching techniques teachers should use in a standards-driven classroom. Instead, the reform design assumes it is the teacher's responsibility to "do whatever it takes for as long as it takes to teach all students to these standards."[6] Still, standards-based teaching requires some very specific skills of teachers: new ways of developing curriculum, and a new mix of teaching methods and assessment strategies that differ from those many teachers have traditionally used. Strong content knowledge and pedagogical training are necessary to acquire these new skills.

In 1996 the District issued a document that outlined its vision of a standards-based approach to instruction:

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[5] R. Mitchell, M. Crawford, and the Chicago Teachers Union Quest Center, *Learning in overdrive: Designing curriculum, instruction, and assessment from standards - A manual for teachers*. Chicago: North American Press, 1997.

[6] Consortium for Policy Research in Education, Research for Action, and the OMG Center for Collaborative Learning, *Making sense of standards: Implementation issues and the impact on teaching practice*. Philadelphia: Author, 1998, p. 7.

> *Our current understanding of the content and processes of learning is that students bring multiple intelligence and previous knowledge into the classroom. Students learn by constructing knowledge through a set of meaningful activities. Adopting high standards for all students will require that all members of our educational community rethink the structures and schedules in schools, as well as the instructional materials, instructional strategies, and investments in classrooms.*[7]

The standards-based environment requires teachers to "rethink" how they teach, and to make significant changes in their practice so that all students will be able to achieve. The existing research on teacher quality, as discussed in the next section of this report, suggests that teachers with certain characteristics are more likely to make these changes and to be more effective at promoting student achievement.

The second-year *Children Achieving* evaluation report also acknowledges that teachers require specific resources, institutional support, and enabling conditions in order to engage in instructional reform. Teacher quality is only one part — albeit an important part — of the standards-based reform puzzle that contributes to improved student achievement.

## DOES QUALITY TEACHING MAKE A DIFFERENCE?

Several studies over the past decade provide empirical evidence that well-qualified and skilled teachers can make a significant difference in student achievement. Ferguson[8] found that teacher quality and knowledge about teaching and learning were the most important factors in student achievement. Research by Sanders and Rivers[9] shows that the most effective teachers can have a major impact on the performance of low-achieving students, an influence that can outweigh the effects of student background. A report on teacher quality by the Education Trust[10] summarizes some research on teacher impact on student achievement, arguing that teachers can make a large difference in student achievement, a difference that can overcome the effects of student background characteristics such as minority status and poverty. The Education Trust report emphasizes the benefits of effective teaching, but acknowledges that none of these studies identify the qualities that make teachers effective.

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[7] School District of Philadelphia, Office of Standards, Equity, and Student Services, *Recommended content standards, benchmarks, and performance examples*. Philadelphia: Author, 1996, p. vii.

[8] R. Ferguson, "Paying for public education: New evidence on how and why money matters," *Harvard Journal on Legislation* 28 (1991), pp. 465-498.

[9] W. Sanders and J. Rivers, *Cumulative and residual effects of teachers on future student academic achievement*. Knoxville, TN: University of Tennessee Value-Added Research and Assessment Center, 1996.

[10] The Education Trust, "Good teaching matters: How well-qualified teachers can close the gap," *Thinking K-16*, 3 (1998).

Research into teacher quality generally focuses on one of two aspects of teacher effectiveness — what teachers do and what attributes they possess. The first body of research concentrates on the things that effective teachers actually do in the classroom to promote student achievement. What effective teachers do is the focus of a vast body of literature going back several decades. The second body of research, and the primary focus of this report, examines teacher quality indicators — certification, qualifications, years in the field — commonly used as proxies for teacher effectiveness. It is important to note here that these indicators are just proxies. There has also been considerable debate whether there is a direct causative link between these teacher indicators and student achievement.

Darling-Hammond[11] provides a detailed review of studies examining the relationship between specific teacher variables, teacher effectiveness, and student achievement. She covers such variables as subject-matter knowledge, knowledge of teaching and learning, teaching experience, certification status, and teacher behavior and practices. Her literature review highlights a relationship between these quality indicators and achievement. For example, in studies that explore the relationship between teacher certification status and student achievement, Darling-Hammond finds that achievement was higher among students whose teachers had formal teacher preparation.

This does not mean that all teachers fully certified in the field they teach are effective teachers. Teacher certification status is an *indicator* of teacher effectiveness or quality. Teacher quality indicators may be thought of as proxies: they *do not guarantee* the quality of individual teachers, but are variables significantly related to teacher quality. If teachers are qualified and certified in the subject and grade level they teach, they are more likely to effectively promote student achievement.

It is beyond the scope of this report, however, to examine the relationship between teacher quality indicators and student achievement. This report presents data on what proportion of teachers in the School District of Philadelphia meet these quality indicators and on the distribution of such teachers across schools of various types and varying enrollments of low-income and minority students.

## STATE-BY-STATE COMPARISON OF TEACHER QUALITY INITIATIVES

In addition to studies attempting to gauge teacher quality by measuring various teacher variables, other research studies have examined the state-, district-, and school-level policies and practices related to teacher quality. These policies and practices cover each stage of the teacher life cycle — from admissions policies of teacher training institutions, state certification requirements, district recruitment and hiring procedures, teaching assignments at the school level, and district retention

[11] L. Darling-Hammond, "Teacher quality and student achievement: A review of state policy evidence," *Education Policy Analysis Archives* 8 (2000).

measures. Researchers have started looking at how state and district policies can effectively promote teacher quality.

Recent research efforts have compared indicators of teacher quality across states.

A 1999 report by the Fordham Foundation, *The Quest for Better Teachers: Grading the States*, assesses each state according to four factors judged as important to teacher quality: accountability for results, extent of school autonomy over staffing, subject mastery, and availability of multiple entry paths to teaching. The authors rank the states from A to F in each performance area. Certain aspects in each performance area are graded separately.

Pennsylvania scores an overall grade of C+, but the report adds, "Thanks to several recent pieces of legislation and gubernatorial initiatives, Pennsylvania will soon boast one of the finest teacher-quality systems in the nation (and its grades will rise accordingly)."[12] These Pennsylvania initiatives (which we discuss later in the report) include: implementation of an alternative certification program, and raising standards for secondary teachers' mastery of their subjects. On the negative side, the Fordham Foundation report notes that Pennsylvania has made little progress in devolving personnel decisions to the school level.

*Education Week*[13] has also published a detailed report on teacher quality that compares states on several dimensions. Beginning with a discussion of some key issues, the *Education Week* report provides a state-by-state checklist covering a wide range of policies related to teacher quality, such as incentives and recruitment, support for new teachers, and licensure requirements. The report includes descriptions of each state's policies with respect to teacher quality, and a report card that grades each state on five dimensions — student achievement, standards and accountability, improving teacher quality, school climate, and resources. The *Education Week* report considers several factors in assessing a state's efforts to improve teacher quality: teacher assessment, teaching in subject, professional support and training, and teacher education (determined by the percentage of students who graduate from institutions accredited by the National Council for the Accreditation of Teacher Education).

On the topic of "improving teacher quality," the report gives Pennsylvania an overall grade of C, and notes that in 1994, 72 percent of secondary teachers in the state held a degree in the subject they taught, and in 1999, 78 percent of education graduates came from NCATE accredited institutions.

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[12] The Fordham Foundation, *The quest for better teachers. Grading the states*. Washington, DC: Author, 1999, p. 36.

[13] Education Week, *Quality counts 2000: Who should teach?* Available on the world wide web at http://www.edweek.org/sreports/qc00/

In 1997, the National Commission on Teaching and America's Future issued a state-by-state report card on twelve indicators of teacher quality.[14] The indicators are grouped under three categories: investment in teacher quality, attention to teacher education and development, and attention to teaching standards. Pennsylvania met passing scores on the following four of the twelve indicators:

- fewer than two percent of new hires were uncertified in their main teaching field;
- fewer than 20 percent of math teachers failed to have even a minor in math;
- student teachers were required to do six or more weeks of teaching; and
- the state requires and funds new teacher induction programs and trains mentors.

These reports assess Pennsylvania's progress or lack of progress in advancing teacher quality and provide a broader context in which to view the work taking place in Philadelphia, the largest school district in the Commonwealth. The Philadelphia public school system employs almost 12,000 teachers while the average district in the state employs fewer than 200.[15] The need for more and better-qualified teachers is now and is likely to remain a significant priority for the District well into the future.

[14] National Commission on Teaching & America's Future, *State-by-state report card: Indicators of attention to teaching quality*. New York: Author, 1997. Available on the world wide web at www.tc.columbia.edu/~teachcomm/states/map.htm

[15] Pennsylvania Department of Education, *Public schools professional personnel, 1999-2000*. Harrisburg, PA: Author, 2000.

# TEACHER DEMOGRAPHICS IN PHILADELPHIA

We begin with a profile of teacher demographics within the system. The profile is based on responses to the CPRE June 1999 teacher survey, one of our key data sources. We also provide data on the school level, ethnicity, gender, qualifications, and experience of teachers in the District, using a combination of CPRE survey data and data supplied by the District.

## SURVEY RESPONSE RATE

Table 1 presents the response rates of teachers who responded to the CPRE survey. The overall response rate for the survey was a relatively high 63 percent; elementary teachers had the highest rate of response.

**TABLE 1. RESPONSE RATE AND NUMBERS TO THE CPRE TEACHER SURVEY, 1998-1999**

| | % response | N response |
|---|---|---|
| Elementary | 66 | 3,254 |
| Middle | 54 | 852 |
| High | 58 | 1,224 |
| TOTAL | 63 | 5,330 |

## ETHNICITY AND GENDER

Table 2 presents a description of some characteristics of teachers who responded to the CPRE survey and data for all teachers provided by the District, where available. The majority of teachers in Philadelphia are White. The District reports that about one-third (34 percent) of its teachers are African American; approximately one-quarter (26 percent) of teachers responding to our survey identified themselves as African American. The survey responses indicate that African American teachers are more likely to teach in middle schools, where 37 percent of teachers are African American and 58 percent are White. Three-quarters of Philadelphia's teachers are women: elementary schools have the highest proportion of women teachers (87 percent); only 48 percent of high school teachers are women.

Table 3 provides data on District students. While 63 percent of the teachers in the District are White, only 18 percent of students are White. The percentage of African American students is twice that of African American teachers. The percentage of students from each ethnic group is roughly equal across school levels, although middle schools have a slightly higher percentage of minority students.

**TABLE 2. PROFILE OF TEACHERS IN THE SCHOOL DISTRICT OF PHILADELPHIA FROM COMBINED DATA SOURCES: 1998-1999 TEACHER SURVEY AND DISTRICT DATA**

| | | Ethnicity | | Gender | Qualifications | Experience |
|---|---|---|---|---|---|---|
| | N | % white | % African American | % male | % with a master's degree and higher | % teachers with more than 15 years total experience |
| **Elementary** | 3,393 | 67 | 25 | 13 | 44 | 55 |
| **Middle** | 889 | 58 | 37 | 17 | 43 | 41 |
| **High** | 1,264 | 69 | 22 | 52 | 62 | 70 |
| **Survey Total** | 5,731[1] | 65 | 26 | 25 | 49 | 56 |
| **District Total** | 10,415 | 63 | 34 | 26 | 58 | 44[2] |

[1]185 teachers teach in schools with other grade configurations.
[2]Percent of teachers with 15 or more years *in the District.*

**TABLE 3. PROFILE OF SCHOOL DISTRICT OF PHILADELPHIA STUDENTS BY ETHNICITY, 1998-1999 (IN PERCENTS)**

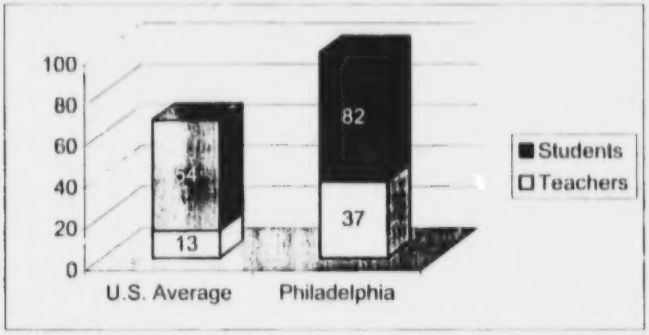
| | White | African American | Asian American | Latino | Native American |
|---|---|---|---|---|---|
| **Elementary** | 18 | 64 | 5 | 13 | .2 |
| **Middle** | 14 | 69 | 3 | 14 | .1 |
| **High** | 21 | 62 | 6 | 10 | .3 |
| **Total** | 18 | 65 | 5 | 12 | .2 |

The National Center for Education Statistics reports average percentage of minority teachers and students in school districts in the United States in 1993-1994.[16] Nationally, 54 percent of public students enrolled in central-city schools and 13 percent of their teachers are members of minority groups, representing a ratio of one minority teacher to 2.2 minority students.

Eighty-two percent of Philadelphia's public school students in 1998 were members of minority groups as were 37 percent of their teachers, also representing a ratio of one minority teacher to 2.2 minority students. While the proportion of minority students and teachers is considerably higher in the Philadelphia public schools, compared with the national average for central-city public schools, the ratio of minority teachers to students is the same.

[16] National Center for Education Statistics, *Schools and staffing in the United States: A statistical profile, 1993-94.* Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement, 1996. (NCES divides the nations' schools into three types: central city, urban fringe, and rural. In 1993-1994, central city schools represented 27 percent of the total.)

**FIGURE 1. RATIO OF MINORITY STUDENTS TO MINORITY TEACHERS IN PUBLIC SCHOOLS**




Source: National Center for Education Statistics (1996). *Schools and staffing in the United States: A statistical profile, 1993-1994*, and School District of Philadelphia, 1999.

There are no studies of which we are aware that examine whether minority teachers are more effective in teaching minority students. Jorgenson[17] argues that teachers of color provide role models to minority students, and that ethnic diversity among teachers can increase knowledge and understanding of different cultural groups which is important for minority and ethnic majority students alike. Jorgenson describes a number of factors that contribute to the national minority teacher shortage, including: a decrease in the proportion of minority students entering teacher training programs, the low prestige associated with teaching, and the working conditions such as low salaries and crowded classrooms that make teaching an unattractive option.

## QUALIFICATIONS AND EXPERIENCE

Table 2 also shows that nearly half (49 percent) of the teachers responding to the CPRE survey have a master's or higher degree, lower than the 58 percent reported by the District for all teachers. High school teachers are most likely to have a master's or higher degree (62 percent), while the percentage of elementary (44 percent) and middle school (43 percent) teachers having a master's or higher degree is similar. Slightly more than half of the teachers (56 percent) who responded to our survey have more than 15 years of teaching experience, with high school teachers the most experienced and middle school teachers the least. The District's data shows that 44 percent of teachers have worked in the District for 15 or more years. We explore the patterns of distribution of teacher qualifications and experience more fully in subsequent sections of this report.

[17] O. Jorgenson, "The need for more ethnic teachers: addressing the critical shortage in American public schools." Available on the world wide web at www.tcrecord.org.

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# TEACHER CERTIFICATION

## TEACHER CERTIFICATION STATUS

Two data sources confirm that most teachers working for the School District of Philadelphia are certified (although this does not necessarily mean they are teaching in areas in which they are certified). First, the Pennsylvania Department of Education, Bureau of Teacher Certification and Preparation conducted a review of professional employee certification and assignments in Philadelphia covering the period from July 1, 1993 through May 21, 1999. The review identified two people working with expired certificates, five people assigned to positions for which they were not properly certified, and six people working without any certification. The review did not report the subjects these individuals were teaching or the schools where they were working. The District was fined $20,634 for these "irregularities" and the Pennsylvania Department of Education recommended that the Philadelphia superintendent of schools establish controls to ensure that all professional employees are properly certified for their assigned positions. This review indicates that few uncertified people are teaching in the Philadelphia public schools. [A recently released study by the Philadelphia Education Fund indicates there may be more uncertified teachers in high-poverty schools.]

Second, a recent analysis conducted by Offenberg and Xu[18] of the District's personnel files for approximately 7,000 of the 11,000 teachers found no teachers without some kind of certification. This does not necessarily mean that teachers were teaching subjects or grades for which they were certified because Offenberg and Xu did not match the teachers' certification with the subjects or levels they taught. Also, the researchers examined only the files of teachers teaching continuously in the District from September 1991 to December 1998, and who were eligible for transfer. This may have resulted in a very biased picture because the approximately 4,000 teachers not included in their analysis did not have a continuous record of service, and therefore were more likely to be uncertified.

## ALIGNMENT OF TEACHER CERTIFICATION AND TEACHER ASSIGNMENTS IN PHILADELPHIA

Having established that most Philadelphia public school teachers are certified, we next considered the extent to which teachers are teaching the subject areas and grade levels for which they are certified. This was relatively easy to determine for elementary and high school teachers, but more complex for middle school teachers.

[18] R. Offenberg and M. Xu, *Teacher mobility: Interim results*. Philadelphia: School District of Philadelphia, 1999.

## MIDDLE SCHOOLS

Collecting data on certification of middle school teachers proved to be difficult because Pennsylvania is one of a decreasing number of states that permits teachers certified in elementary education (kindergarten through sixth grade) to teach core subjects in seventh and eighth grade classes. As a result, elementary-trained teachers may be technically certified to teach in middle schools, but they may lack the subject-level expertise needed to teach at that level.

Useem[19] explains that Pennsylvania allows certified elementary teachers to teach seventh and eighth grades, provided the "teacher certification preparation program and [the teacher's] repertoire of subject knowledge and instructional skills are commensurate with the learning outcomes that a given course is intended to achieve."[20] In practice, Useem argues that this regulation is not enforced and that "teachers are frequently assigned to classes of seventh and eighth graders in subject areas for which they are manifestly unqualified."[21]

Similarly, a number of teachers certified in elementary education are assigned as math, science, or English as a Second Language subject specialists in elementary schools, despite not having a college major or minor or certification specific to these subjects.

In his ongoing study of the science program in Philadelphia's Talent Development Middle Schools, Ruby[22] describes how science teachers certified in secondary education were replaced by those with elementary certification in the change from junior high schools to middle schools in the 1980s. He explains, "Philosophically, elementary-certified teachers were considered more in tune with the child-centered approach to be used. Practically, elementary-certified teachers were easier to roster as they were allowed to teach any subject."[23] Ruby adds that the introduction of houses in middle schools, called small learning communities under the *Children Achieving* initiative, increased the complexity of teacher scheduling.

In the mid-1990s, each Philadelphia middle school was required to have at least one science teacher certified in secondary education, but this policy has since been dropped. It appears that many K-8 and middle school principals still prefer to hire elementary-certified teachers because these teachers can be scheduled more flexibly

[19] E. Useem, *New teacher staffing and comprehensive middle school reform: Philadelphia's experience*. Philadelphia: Philadelphia Education Fund, 2000.

[20] Pennsylvania Department of Education, *Certification/staffing policy guideline, No. 86*. Harrisburg, PA: Author, 1990, p. 2.

[21] Useem, *New teacher staffing and comprehensive middle school reform*, p. 2.

[22] A. Ruby, *An implementable curriculum approach to improving science instruction in urban schools*. Paper presented at the annual meeting of the American Educational Research Association, Montreal, April 1999.

[23] Ibid, p. 10.

and assigned to teach any subject. The District does not have the right to insist that subject specialists fill middle school vacancies. Principals advise the District about their vacancies often in unspecific terms such as "middle grades teacher." Furthermore, because the District does not maintain records on what subject the teacher is assigned to teach once the teacher starts working at a school, it is difficult to track teacher assignments at the school level.

Useem, Barends, and Lindermayer[24] reviewed the certification levels of all middle school teachers in the School District of Philadelphia in the 1999-2000 school year. They found that nearly all (93 percent) middle school teachers were certified as elementary teachers, meaning they were not trained to teach beyond the sixth grade. This problem is exacerbated by the apprentice teachers with emergency certificates hired to fill middle school vacancies.

From seven of the District's 37 middle schools, Useem[25] surveyed all teachers new to their schools and the District in the 1999-2000 school year. She found that 65 percent of teachers in these schools were certified in elementary education, eight percent were certified in secondary education, and 29 percent were apprentice teachers with emergency certificates. Two-thirds of the apprentice teachers were enrolled in elementary education programs.

Based on their research in middle schools, Useem, Barends, and Lindermayer[26] argue:

> *It should be cause for increasing alarm that Pennsylvania still allows middle schools to assign elementary certified teachers to instruct grades seven and eight despite holding a K-6 license at a time when standards-based curricula and assessments are being implemented. This particular practice is increasingly uncommon in other states.*

Thus, the pertinent issue for Philadelphia elementary and middle schools is not the rate of teacher certification, which is very high, but the type of certification teachers have. Students, particularly middle school students, will be at a disadvantage as long as they are taught by teachers without subject-matter expertise. In a policy environment that increasingly holds students and teachers accountable for performance on standardized tests, this mismatch between certification and grade level or subject assignments will continue to undermine the District's goals for its middle schools.

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[24] E. Useem, R. Barends, and K. Lindermayer, *The preparation of middle grades teachers in an era of high stakes and high standards: Philadelphia's predicament*. Philadelphia: Philadelphia Education Fund, 1999.

[25] E. Useem, *Recruitment and retention of new middle school teachers in the School District of Philadelphia*. Paper presented at the Philadelphia School Research Forum Meeting, Philadelphia Education Fund, May 2000.

[26] Useem, Barends, and Lindermayer, *The preparation of middle grades teachers in an era of high stakes and high standards*, p. 3

## ELEMENTARY AND HIGH SCHOOLS

The 1998-1999 CPRE teacher survey asked teachers to mark the one "field in which you teach the most classes this year." They were then asked, "Do you have a Pennsylvania teaching certificate in the field you marked in the question above?" Teachers were also asked whether or not they had an instructional or an emergency certificate in their main teaching assignment, or in a different field. The results are presented in Table 4.

**TABLE 4. PERCENTAGE OF TEACHERS IN THE SCHOOL DISTRICT OF PHILADELPHIA WITH INSTRUCTIONAL OR EMERGENCY CERTIFICATE *NOT* IN THEIR MAIN TEACHING FIELD, 1998-1999**

| | Instructional Certificate | Emergency Certificate |
|---|---|---|
| Elementary | 7% | 1% |
| Middle | N/A | 3% |
| High | 3% | 1% |
| Survey total | 1%* | 2% |

Note: N/A applies to certification for elementary and middle schools because there was some confusion in the way the teachers interpreted the question.
* Includes only elementary and high school teachers.

Table 4 shows that seven percent of elementary schools teachers said their instructional certificate was not in their main teaching field, and one percent had emergency certification in other than their main teaching field. Three percent of high school teachers had an instructional certificate in another field, and one percent had emergency certification in another field. Overall, one percent of elementary and high school teachers responded that their instructional certificates were not in the field they spent most of their time teaching, and another two percent said they had emergency certification in a subject or level other than the field they were mainly teaching.

We have not included the percentage of middle school teachers who said their instructional certificate was in another field because it is likely that they misinterpreted the question. Most middle school teachers in the District have elementary certification and so, technically, have an instructional certificate in a different field. However, Table 4 shows that middle school teachers are three times more likely than elementary and high school teachers to have an emergency certificate in other than their main teaching field.

## ALIGNMENT OF TEACHING ASSIGNMENTS WITH TEACHER CERTIFICATION: COMPARISON WITH PENNSYLVANIA AS A WHOLE

For a 1997 background paper for the Pennsylvania State Board of Education titled *Teacher Preparation and Selection in Pennsylvania,* Strauss undertook an extensive study of teacher preparation in the Commonwealth. Using data from the

Professional Personnel forms filed annually by school district superintendents as well as Pennsylvania Department of Education certification records, Strauss examined the extent to which teachers were certified in their main teaching assignment. Table 5 reproduces the table Strauss developed to show the percentage of teachers during the 1995-1996 school year that had teaching certificates inconsistent with the subjects they were assigned to teach. Table 5 also compares certification status for Pennsylvania teachers' major and minor teaching assignments, information we do not have for the Philadelphia teachers in our study.

**TABLE 5. PERCENTAGE OF PENNSYLVANIA TEACHERS WHOSE CERTIFICATION IS INCONSISTENT WITH THEIR TEACHING ASSIGNMENTS, BY SUBJECT AND LEVEL, 1995-1996**

| | Math | General Science | English | Elementary | TOTAL |
|---|---|---|---|---|---|
| Major teaching Assignment | 2 | 15 | 3 | 1 | 3 |
| Minor teaching assignment | 14 | 34 | 2 | 4 | 11 |

Source: Strauss, R. (1997). Teacher preparation and selection in Pennsylvania. Background paper for the Pennsylvania State Board of Education, pp. 114-117

For large teaching areas such as English and Elementary education, Strauss shows, "the misassignment of teachers statewide is relative[ly] modest: the rates are one percent for Elementary Education and three percent for English."[27] Teachers whose major assignment was to teach general science or whose minor assignment was to teach math, however, were less likely to have certification in those subject areas. Fourteen percent of teachers assigned math as their minor teaching assignment did not have appropriate certification; 34 percent of those teaching general science as their minor teaching assignment lacked such certification. Overall, the rate of teachers not certified to teach their minor teaching assignment was four times higher than for teachers not certified to teach their major teaching assignment. That students may be taught by teachers not certified to teach those subjects, for Strauss, was a key issue.

## HOW PHILADELPHIA COMPARES

When we compare our Philadelphia data presented in Table 4 with Strauss' Pennsylvania data in Table 5, it suggests that a greater portion of Philadelphia teachers are teaching outside their area of certification than their peers throughout the state. Strauss found that only one percent of elementary teachers statewide did not have elementary certification, compared with eight percent according to the CPRE teacher survey in Philadelphia. The overall proportion of those whose certification is inconsistent with their assignment is the same for both the state and Philadelphia (three percent). However, the Philadelphia average does not include middle school

[27] R. Strauss, *Teacher preparation and selection in Pennsylvania*. Background paper for the Pennsylvania State Board of Education, 1997, p. 114.

teachers. If it did, it is likely that Philadelphia's overall rate of misassignment would be higher.

Our survey of Philadelphia teachers also did not ask teachers about their certification status with regard to their minor teaching assignments. However, had we done so, Strauss' findings suggest that the proportion of Philadelphia teachers whose minor teaching assignments fall outside their area of certification would have also been higher than for teacher's main teaching assignment. This is an important point because, from a student's perspective, it is obviously desirable to have a fully-certified math teacher, whether or not it is that teacher's major or minor assignment.

Although assignment of teachers outside their area of certification is a concern in the state, Pennsylvania compares favorably with other states on this issue, according to the Education Goals Panel,[28] a bipartisan body of state and federal officials established in 1990 to monitor state and national progress on the National Education Goals. The Panel found that fully 99 percent of Pennsylvania's secondary teachers in 1994 had a teaching certificate in the main subject they taught. Our CPRE teacher survey data revealed that a somewhat similar 96 percent of secondary teachers in the School District of Philadelphia had a teaching certificate in their main teaching subject (see Table 4).

## TEACHER CERTIFICATION: COMPARISON WITH NATIONAL STUDIES

The National Center for Educational Statistics (NCES)[29] found that 92-93 percent of teachers nationwide in 1998-1999 were fully certified in the field of their main teaching assignment, meaning that seven-to-eight percent of teachers were not fully certified in their field. Fully-certified teachers were defined as those having either a regular or standard state certificate, or an advanced professional certificate in the field they taught most often. The NCES based its report on teacher quality on their analysis of two databases: the 1993-1994 Schools and Staffing Survey (SASS) and the 1998 Fast Response Survey System (FRSS) Teacher Survey.

In comparison with teachers nationally, Philadelphia teachers rank well in some cases, but not well in others. The NCES study found that general elementary teachers nationwide all had some kind of certification in their main teaching field, while eight percent of elementary teachers in Philadelphia said they did not have an instructional or emergency certification in their main teaching field.

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[28] National Education Goals Panel, *National education goals report and data volume*. Washington, DC: Author, 1999.

[29] National Center for Educational Statistics, *Teacher quality: A report on the preparation and qualifications of public school teachers*. Washington, DC: Author, 1999.

The NCES study found that 0.5 percent of departmentalized or subject specialist teachers nationally did not have certification in their main teaching assignment. In Philadelphia, we found that four percent of high school teachers had either an instructional or emergency certificate that was outside their main teaching field. The NCES study included departmentalized middle school teachers, whereas we only had data for high school teachers. The comparison does indicate, however, that the percentage of departmentalized teachers who are not certified in their main teaching field is higher in Philadelphia than the national average.

An earlier study by Boe, Cook, Bobbitt, and Terhanian[30] used the 1990-1991 SASS database to analyze the certification status of more than 46,000 general and special education teachers. The researchers divided teachers into two categories: those fully certified in their main teaching assignment, and those partially certified in their main teaching assignment. This second category included teachers with temporary or emergency certificates as well as those who did not have any certificate in their main teaching assignment. The researchers analyzed the shortage of fully-certified teachers and concluded that, according to a 1990-1991 nationally representative sample of teachers, 5.5 percent of general education teachers were only partly certified. This is less than the seven-to-eight percent of teachers found to be not fully certified by NCES in 1998-1999. This may mean that the number of teachers with less than full certification in their main teaching field has increased over the last decade

## OUT-OF-FIELD TEACHING

Certification status is one measure of out-of-field teaching. But out-of-field teaching also encompasses the extent to which teachers teach subjects and grade levels for which they are not considered to be fully qualified. Out-of-field teaching can be defined to include:

- whether teachers are certified at all;
- whether teachers are certified in the specific subject and grade level of their major or minor teaching assignments; and
- whether teachers have a college major or minor in their major or minor teaching assignments.

[30] E. Boe, L. Cook, S. Bobbitt, and G. Terhanian, "The shortage of fully certified teachers in special and general education," *Teacher Education and Special Education* 21 (1998), pp. 1-21.

Ingersoll[31] assessed the extent of out-of-field teaching nationally by examining several indicators. Using a representative national sample from the SASS surveys of 1987-1988, 1990-1991, and 1993-1994, he found that about one-third of all seventh through twelfth grade math teachers did not have teaching certificates in mathematics. Ingersoll notes that even this figure may not convey the extent of out-of-field teaching "within broad, multidisciplinarian fields, such as science and social studies. Teachers in these fields are routinely required to teach any of a wide array of subjects within the department. Even if they are certified in the field, however, they may not be qualified to teach all the disciplines within the larger field."[32]

Ingersoll also examined the percentage of teachers who were teaching core academic subjects without either a college minor or major in that teaching field. He counted both academic and education majors and minors. For example, a teacher could be certified to teach math in middle school, while holding only an elementary (K-6) certificate and having neither a major nor a minor in mathematics. In this case, the teacher would be certified but teaching out-of-field, and therefore not "qualified" to teach that subject. But as Ingersoll points out, "A college minor, of course, does not guarantee quality teaching, nor even a qualified teacher. My assumption was that adequately qualified teachers, especially at the secondary level and especially in the core academic fields, ought to have, as a minimum prerequisite, at least a college minor in the subjects they teach."[33]

It is also worthwhile noting that as the distance from the college years grows, the relevance of a college major or minor probably decreases. For teachers who have been teaching more than 20 years, as is true of approximately 46 percent of Philadelphia's public school teachers, the value of a college major or minor may be greatly diminished. However, we would argue that the extent of out-of-field teaching, along with other quality indicators, is useful in building a profile of teacher quality across schools.

Ingersoll concludes that out-of-field teaching is widespread at the national level. For example, about one-third of all secondary school teachers teaching math have neither a major or minor in math, math education, or related disciplines like engineering or physics. Furthermore, about one-quarter of English teachers, about one-fifth of science teachers, and one-fifth of social studies teachers do not have majors or minors in their subject or in a related discipline.

We do not have data on out-of-field teaching in Philadelphia public schools. However, Ingersoll's findings at the national level suggest that out-of-field teaching is

[31] R. Ingersoll, "The problem of underqualified teachers in American secondary schools," *Educational Researcher* 28 (1999), pp. 26-37. See also the response to his article and discussion of the significance of out-of-field teaching in S. Friedman, "How much of a problem? A reply to Ingersoll's 'The problem of underqualified teachers in American secondary schools,'" *Educational Researcher* 29 (2000), pp. 18-20.

[32] Ingersoll, "The problem of underqualified teachers in American secondary schools," p. 28.

[33] Ibid, p. 27.

likely to be a significant problem in the School District of Philadelphia, so it is important that research be conducted to determine the extent of the problem and monitor it on an ongoing basis.

## RELATIONSHIP BETWEEN OUT-OF-FIELD TEACHING AND STUDENT POVERTY AND PERCENTAGE OF MINORITY STUDENTS

The practice of assigning teachers to teach subjects outside their field seems relatively widespread throughout the United States, but this pattern occurs with even greater frequency in large public schools serving predominantly minority student populations living in poverty. We conclude this section by reviewing the research on the relationships between teachers teaching out-of-field and the following characteristics:

- size and type of school;
- minority- and high-poverty enrollment;
- middle school students; and
- High-track vs. low-track classes

**Size and type of school.** Ingersoll found that the most important school characteristics related to out-of-field teaching were school size and type (that is, public or private). Among both public and private schools, larger schools have fewer out-of-field teachers than smaller schools. Large private schools have the lowest levels of out-of-field teaching; small private schools have the highest levels of out-of-field teaching.

**Minority and high-poverty enrollment.** The authors of a 1998 report by the Education Trust, *Good Teaching Matters*, cite unpublished research evidence from Ingersoll that looks at the relationship between the percentage of classes taught by teachers lacking a major in the field and the percentage of minority students in a school. Based on 1993-1994 data, Ingersoll's research shows only 16 percent of classes in schools with enrollment of less than 15 percent minority students are taught by teachers lacking a major in their field. In comparison, in schools with minority enrollments of more than 50 percent of students, 22 percent of classes are taught by teachers lacking a major in their field.

Ingersoll found a similar pattern when he analyzed the percentage of high-poverty students in schools. He found that in schools where less than 15 percent of the students were from high-poverty households, only 15 percent of classes were taught by teachers who did not have a minor or major in that field. When more than half of the students in a school were from high-poverty households, one-quarter of the classes were taught by teachers without a minor or major in the field.

On the basis of these findings, the Education Trust report states that, "...minority and poor youngsters — the very youngsters who are most dependent on their teachers for content knowledge — are systematically taught by teachers with the least content knowledge."[24]

Citing a 1995 report from the National Governors' Association, the authors of the Education Trust report note that the problems in central cities are "particularly acute." They write,

> *Emergency hiring, assignment of teachers outside their fields of preparation, and high turnover in underfunded schools conspire to produce a situation in which many poor and minority students are taught throughout their entire school careers by a steady stream of the least qualified and experienced teachers.*[25]

We examine the relationship between teacher quality indicators and the percentage of poor and minority students in the School District of Philadelphia later in this report.

**Middle school students.** Out-of-field teaching also appears to be strongly related to middle schools. The 1999 report published by the Council of Chief State School Officers, *State Indicators of Science and Mathematics Education*, notes that seventh and eighth grade students are most likely to have a teacher who may be under-qualified. Only one-quarter of the science and math teachers in those grades were certified in the areas they were teaching. Furthermore, the report shows that 28 percent of math teachers and 26 percent of science teachers teaching seventh through twelfth grades in 1998 had not majored in their assigned fields. The study corroborated the findings of other researchers that students in classes with high proportions of minority or low-income students were less likely to be taught by teachers well prepared in those subjects.

**High-track vs. low-track classes.** Ingersoll also found differences *within* schools in the amount of out-of-field teaching. Low-achieving classes were the most likely to be taught by out-of-field teachers. This suggests that examination of out-of-field teaching also needs to monitor the differences between high-track and low-track classes. If in-field teaching can have a positive impact on student achievement, then it can be argued that low-achieving students should be taught by teachers who are certified in the subjects they teach.

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[24] The Education Trust, "Good teaching matters," p. 7.

[25] L. Darling-Hammond, "The role of teacher expertise and experience in students' opportunity to learn," *Strategies for linking school finance and students' opportunity to learn*. Washington, DC: National Governors' Association, 1996. Cited in The Education Trust, "Good teaching matters," p. 10.

# TEACHER SUPPLY AND DEMAND

There have been many state-by-state comparisons of teacher quality efforts but, to our knowledge, the Urban Teacher Collaborative is the only organization that has tracked teacher quality at the district level, over time, albeit on a limited number of dimensions. In a 2000 report,[36] the Collaborative predicts severe teacher shortages in the nation's 57 large urban school districts. The report presents a snapshot of teacher supply and demand based on a survey of the 39 school districts that are members of the Council of the Great City Schools, including Philadelphia. The Collaborative reports that almost all of the districts had an immediate need in 1998-1999 for teachers of special education, science, and mathematics, the same fields that were in high demand in 1996 when their first report on supply and demand was published. In 1998-1999, districts also needed bilingual teachers, English as a second language teachers, and educational technology specialists; half of the districts reported an immediate need for elementary teachers.

According to the survey, Philadelphia needed teachers in certain subject areas at all grade levels: special education, mathematics, science, English as a second language, and bilingual education. In addition, the District had an immediate need for elementary teachers, early childhood teachers, teachers of color, and substitute teachers.

## TEACHER SHORTAGES

We have attempted to determine whether Philadelphia will face a shortage of certified teachers. While salary, residency, and other issues may pose serious hurdles to teacher recruitment in Philadelphia, researchers identify an ample supply of newly-trained, certified teachers in the state. Strauss[37] has documented that the number of newly-trained teachers hired across Pennsylvania each year is only a fraction of the number of teaching certificates issued annually. According to Strauss, the more than 90 teacher preparation institutions in Pennsylvania issued a total of 23,945 certificates in 1996, but the schools in the state typically hire only 1,000 to 2,000 newly-trained teachers each year. When considering such additional factors as age of retirement of teachers and student demographics, Strauss says that "it is difficult to reach the conclusion that there will be teacher shortages" in Pennsylvania.[38]

In applying his analysis to the School District of Philadelphia, Strauss concludes that, in the highest-need scenario, Philadelphia would need to hire an estimated

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[36] The Urban Teacher Collaborative, *Teacher demand and supply in the Great City Schools*. Washington, DC: Council of the Great City Schools, 2000.

[37] Strauss, *Teacher preparation and selection in Pennsylvania*.

[38] Ibid, p. 4.

13,000 teachers in the nine-year period from fall 1997 to spring 2006. On paper, it seems that the demand could be met easily by the teachers trained in Philadelphia and elsewhere in Pennsylvania. An ample supply of trained teachers in the state, however, is no guarantee that Philadelphia will be able to compete to fill a growing number of teacher vacancies. In fact, the District already faces a severe shortage. A January 2000 article in the *Philadelphia Inquirer* quotes the District's director of human resources as saying that Philadelphia, "...opened school this [1999-2000] year with 250 vacancies. Halfway through the school year, 169 jobs have yet to be filled with qualified teachers.... Philadelphia may need to hire 1,500 teachers by September [2000]."[39]

## MIDDLE SCHOOL TEACHER SHORTAGES

There may be a general surplus of trained teachers, but there is a shortage of teachers trained in certain high-demand areas such as middle school. Useem, Barends, and Lindermayer have highlighted the acute shortage of teachers with middle school certification. A middle school teaching certificate indicates that the teacher has received training specific to teaching sixth through eighth grade students, unlike the elementary education certificate that qualifies a teacher to teach middle school in Pennsylvania.

The shortage of trained middle school teachers is not unique to Pennsylvania. As described by Useem, Barends, and Lindermayer, researchers have documented a lack of middle school preparation programs for some time. A November 1999 phone survey of 19 Philadelphia-area colleges and universities identified three institutions offering middle-year programs — Temple University, Rosemont College, and Widener University — all launched within the last three years.[40] There is an oversupply of teachers in Pennsylvania, but there is a shortage of qualified teachers with middle school certification. However, given the general reluctance to teach in the District's middle schools, it is not known whether more teacher trainees will enroll in middle school training programs, if they are available.

[39] D. Mezzacappa, "Report shows city hurting for teachers even more than most," *The Philadelphia Inquirer*, 1/20/2000.

[40] Useem, Barends, and Lindermayer, *The preparation of middle grades teachers in an era of high stakes and high standards*.

# HIRING AND RECRUITMENT

Research on teacher recruitment and retention suggests that a lack of trained teachers is not the underlying cause of teacher shortages in the School District of Philadelphia. The District has a problem attracting teachers, despite the oversupply of elementary and high school teachers in Pennsylvania suggested by Strauss' research. Rather, the shortage is caused by two key factors: the reluctance of trained teachers to teach in the District, and the high numbers of teachers who leave the District. In this section of the report we discuss the issue of recruitment in the District; we discuss the issue of retention and teacher later.

Useem has undertaken several studies that have surveyed applicants and new hires by the School District of Philadelphia. For a 1997 study, Useem interviewed 23 newly-hired teachers in focus groups about their perceptions of the District's hiring and induction process.[33] The new teachers described the process as frustrating, unprofessional, and protracted. They described the induction experience at their schools, however, in more favorable terms, although still expressing a number of concerns. Some of these teachers were assigned to jobs for which they had no training, were transferred to another school shortly after the beginning of the school year, or were assigned to classes with no teaching materials. Almost all of the respondents said they lacked basic information about policies pertaining to their school and the District. Most were never assigned a mentor or never saw their mentor despite the District's formal teacher mentoring program in place at that time.

The findings of a follow-up study were more encouraging. Useem[41] solicited the perceptions of teachers newly hired between 1997 and 1998, after the District changed a number of its recruitment, hiring, and induction practices. Since 1997, Useem[42] reports, the District's Office of Human Resources had been implementing changes designed to improve the recruitment and hiring process. These changes include but are not limited to the following measures:

- extensive use of the Internet for recruitment of all candidates;
- promoting the visibility of the District through local newspapers, television, regional consortia, and job fairs;
- creating a waiver process for apprentice, long-term substitute, substitute, and student teachers;

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[41] E. Useem, *New teachers' assessments of the hiring process in the School District of Philadelphia: Results from two surveys*. Philadelphia: School District of Philadelphia and Philadelphia Education Fund, 1999.

[42] Ibid.

- establishing Saturday recruitment hours;
- standardizing E-mail responses and providing more timely responses to common E-mail inquiries;
- streamlining the interview and selection process for all bilingual candidates;
- continuous testing and hiring of qualified teacher candidates throughout the year;
- intensive recruitment at historically African American colleges and universities and other minority organizations to increase diversity;
- partnering with schools and training programs to pay the majority of student fees for those who will commit to teach in specific District clusters for a period of four years;
- developing brochures to promote new programs and related bonus announcements;
- holding job fairs at middle and high schools to "Grow Our Own" bilingual and ESOL teachers;
- involving recruiters in all phases of the hiring process;
- initiating a pre-hiring process in March for the following school year;
- expediting the hiring process and improving the competence and courtesy of Human Resources personnel;
- persuading the Philadelphia City Council in 1999 to relax the residency requirement and extending from one to three years the deadline by which teachers must move into the city; and
- enacting a signing bonus of $4,500 — $1,500 after five months and $3,000 after three years of employment.

Useem's follow-up study suggests that the District's initiatives are having a positive impact on teacher hiring and grade-level placement. The percentage of teachers who said they were happy with their grade assignments rose from 67 percent in 1997 to 84 percent in 1998. In a study conducted in 2000, Useem[43] asked 60 new teachers from seven middle schools about the influence of the District's hiring incentives. Twenty-one percent said the hiring bonus was very important in deciding to teach in Philadelphia, 37 percent said it was somewhat important, and 42 percent said it was not important.

[43] E. Useem, *Interviews with 60 new middle school teachers.* Report presented to Philadelphia School Research Forum Meeting, Philadelphia Education Fund, May 2000.

## RECRUITMENT ISSUES FOR MIDDLE SCHOOL TEACHERS

The 1999 Useem study identified high levels of dissatisfaction among new middle school teachers. These teachers were also more likely to rate the services of the School Staffing Division within the District's Office of Human Resources as poor. Useem reports, "Almost half of the seventh and eighth grade new teachers said they were unhappy with their grade placement and two-fifths of them claimed they were not well prepared to teach those grade levels."[44]

The research presented in this report shows that middle schools have the highest rate of teacher mobility and the highest percentage of teachers lacking preparation in the grade or subject they are assigned to teach. If teachers have a negative hiring experience, then are assigned to schools and classes where they do not want to be or are not prepared to handle, high teacher mobility is likely. These research findings suggest that improving the hiring and assignment process for middle school and middle grade teachers should be a priority.

The District has already begun to address the hiring of middle school teachers. With the assistance of the New Teacher Project, Inc., the District is undertaking a major initiative aimed at addressing the shortage of middle school teachers. The District will pay the non-profit consulting firm to help recruit, train, and support as many as 75 middle school teachers.[45] The program will target new graduates or young professionals with bachelor's degrees in fields other than teaching and will provide a five-week summer training course and additional support during the school year.

## IMPACT OF THE PHILADELPHIA RESIDENCY REQUIREMENT

Until quite recently, Philadelphia teachers hired after 1983 had to comply with a residency requirement effective one year from their date of hire. In the summer of 1999 the Philadelphia City Council extended the deadline to three years. Useem's study of 60 middle teachers new in the 1999-2000 school year, asked teachers about the impact of the teacher residency requirement on their decisions to continue teaching in the city. Twenty-six percent said it was very important, 14 percent said it was somewhat important, and 60 percent said it was not important. Many of those who replied that it was not important said it would be more important in the future "and would be a primary reason for their choosing to seek employment outside of the city."[46]

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[44] Useem, *New teachers' assessments of the hiring process in the School District of Philadelphia*, p. 7.

[45] S. Snyder, "District hires consultant to help find middle school teachers," *The Philadelphia Inquirer*, 4/4/2000.

[46] Useem, *New teachers' assessments of the hiring process in the School District of Philadelphia*, p. 6.

Half of the 60 middle school teachers cited the residency requirement when asked an open-ended question about the factors that might cause them to leave the District in the future. These newly hired teachers cited other reasons that might cause them to leave the District: student discipline and behavior was mentioned by 32 percent of respondents and salary by 28 percent. The residency requirement declined in importance as a factor discouraging student teachers from taking jobs in the District from 66 percent in 1998 to 40 percent in 1999. Still, it remained one of the most frequently mentioned reasons. These findings indicate that the residency requirement continues to have a significant impact on the hiring and retention of teachers in the District.

Newly-trained teachers from the Philadelphia region are not the only graduates who express reluctance to seek employment in Philadelphia after graduation. A study by Greater Philadelphia First in 2000[47] surveyed students in information technology courses in seven regional schools and found that students expressed a lack of enthusiasm about living and working in Philadelphia. The report recommended: "[Students] need to be convinced that Philadelphia has the lifestyle they want. They are ours to lose. We must do a better job of promoting what our region has to offer them."[48] The Greater Philadelphia First report suggests that lifestyle factors play an important role in recruitment to Philadelphia, and that universities and prospective employers must become more active, not only in introducing students to the available professional opportunities, but also to the attractions and lifestyle benefits of the city.

## THE IMPACT OF HIRING DELAYS

Another issue that contributes to recruitment and hiring problems is the timing of teacher hiring. Ideally, teachers are appointed in June so they have time to prepare for the school year ahead. In many cases, however, Philadelphia does not appoint teachers until the end of the summer, or after September 1. Teachers appointed after September 1 are considered to be on "special assignment" and must leave at the end of the school year unless they find a regular school placement. This practice adds to instability in the teaching staff.

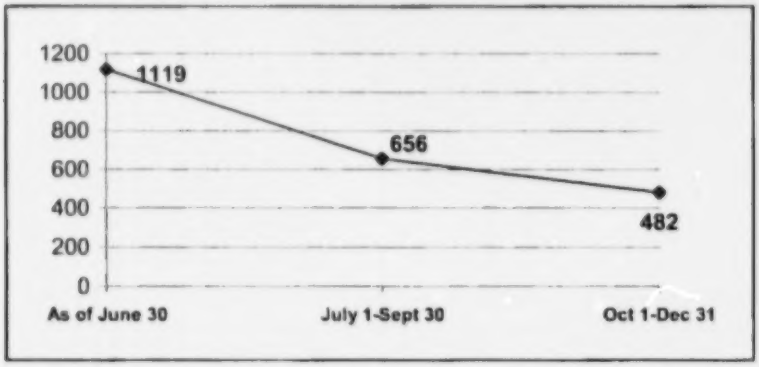
One of the key reasons for late hiring of teachers is that many resigning or retiring teachers delay notifying the District of their intentions. A total of 2,257 District teachers resigned or retired between April 1999 and December 1999. Of those, 1,119 left by the end of June 1999, giving the District time to hire a replacement before the start of the 1999-2000 school year. Another 656 teachers left between July 1 and September 30, 1999, and 482 more teachers left between October 1 and the end of December 1999. [Note: The new teachers' contract signed in the fall of 2000 provides benefits for teachers who give notification of retirement by April 15, which partly

[47] Greater Philadelphia First, *Fall 1999 survey of regional college and university technology students*. Philadelphia: Author, 2000.

[48] Ibid, p. iv.

addresses this issue raised by the author. Also, teachers must now give notice of request to transfer prior to May 1.]

**FIGURE 2. TEACHER RECRUITMENTS OR RESIGNATIONS BY DATE OF NOTIFICATION IN 1999 IN THE SCHOOL DISTRICT OF PHILADELPHIA**




Source: School District of Philadelphia

These late resignations and retirements meant that the District was forced to hire teachers who had no time to prepare for their classes, or who had to take over classrooms after the beginning of the school year. This created disruptions for the students who experienced a change of teacher in the first quarter. Most of the teachers who left after July probably knew earlier that they were going to do so. It is a serious problem they did not make their decisions known in time for the District to fill their positions with teachers who could prepare for the year ahead. Teachers may fear the loss of their benefits over the summer if they announce their decisions before the end of June. We do not have any data on this particular issue, but the District should address it to support teacher quality and staff stability in the schools.

## RECOMMENDATIONS FOR IMPROVING RECRUITMENT

Useem[49] summarized the findings of five studies and identified the key issues the District faces with respect to recruitment, hiring, and induction of teachers. The studies included focus group interviews with newly-hired teachers and printed surveys mailed to student teachers and new teachers. In summarizing the findings from the five studies, Useem recommended that the District take the following steps to alleviate the teacher shortage:

[49] E. Useem, *Perspectives on Philadelphia' teacher shortage: Evidence from five studies of prospective new teachers*. Philadelphia: Philadelphia Education Fund, 1999.

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- modernize and expedite the hiring process;
- modify or eliminate the residency requirement;[50]
- allow teacher recruits and principals greater choice over assignment of staff to schools; and
- train administrators to welcome and support new teachers.

The January 2000 report by the Urban Teacher Collaborative described steps school districts were attempting to address their teacher shortages. Recruitment strategies included: alternative licensure routes, job fairs, monetary incentives, and strategies specifically designed to recruit teachers of color. Two-thirds (67.5 percent) of the districts were using retention strategies such as induction and support programs for newly-hired teachers. As part of this study, the School District of Philadelphia reported it was using the following strategies: special recruitment efforts at colleges and universities and historically African American/Hispanic colleges, guarantees of placement in the school of their choice, expediting the contracting process, induction/support programs for new hires, alternative certification, and other strategies to improve access to information about teaching in the District.

[50] As of October 30, 2000, the District still required new teachers to move into the city of Philadelphia after one year on the job.

# TEACHER PREPARATION AND QUALIFICATIONS

The supply of certified elementary and high school teachers emerging from higher education institutions in Pennsylvania exceeds the demand, but certification in itself does not guarantee that teachers are adequately prepared. Strauss[51] points out that the passing scores on the PRAXIS teacher exams are quite low in Pennsylvania relative to other states, resulting in a high pass rate on the PRAXIS exam. Colleges and universities in Pennsylvania train a large number of teachers, but the quality of the preparation many teachers receive may be quite low. Strauss presents data on the National Testing Exam (NTE) scores of newly hired teachers by Pennsylvania metropolitan statistical areas 1987 to 1996. His analysis shows that newly hired teachers in Philadelphia had among the lowest scores on the NTE of the 16 metropolitan areas in Pennsylvania.[52]

## IMPORTANCE OF HIGH SCORES ON STATE TEACHER EXAMS

Ferguson's 1991 analysis[53] of nearly 900 Texas school districts illustrates the importance of teachers' scores on state licensing exams to student achievement. He found that teacher preparation accounted for more variation in student achievement in the first through the eleventh grades than a student's socioeconomic status. Ferguson examined the combined effects of teachers' scores on the state licensing examination, on master's degrees, and on teaching experience. The largest effects were found for teachers' scores on the state licensing exam, a test that measures both basic skills and teaching knowledge.

Darling-Hammond discusses Ferguson's research: "The effects were so strong, and the variations in teacher expertise so great, that after controlling for socioeconomic status, the large disparities in achievement between African American and White students were almost entirely accounted for by differences in the qualifications of their teachers."[54] Darling-Hammond[55] explains that other studies using smaller databases and "rougher proxies for teacher knowledge," such as masters degrees and ACT scores instead of teacher licensing examination scores, found smaller and mixed effects for teacher qualifications.

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[51] Strauss, *Teacher preparation and selection in Pennsylvania.*

[52] Ibid, p. 140

[53] Ferguson, "Paying for pubic education."

[54] L. Darling-Hammond, "Teacher quality and student achievement: A review of the state evidence," *Education Policy Analysis Archives* 8 (2000), p. 8.

[55] Ibid.



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## CORRELATION BETWEEN MASTER'S DEGREE AND TEACHER EFFECTIVENESS

A 1996 study by Ferguson and Ladd[56] found that master's degrees had the greatest influence on student achievement in Alabama. However, Goldhaber and Brewer[57] found that students of "math teachers with Bachelor's or Master's degrees in mathematics ... have higher test scores relative to those teachers who have out of subject degrees; in science there is no impact of teachers having subject-specific degrees." Grissmer, Flanagan, Kawata, and Williamson[58] examined state-level math and reading achievement scores on the National Assessment of Educational Progress (NAEP) tests from 1990 through 1996 to see what effects different policies and factors had on achievement. They found that, all other things being equal, states having a higher percentage of teachers with master's degrees did not have higher tests.

This evidence suggests that it is important to consider whether the master's degree is in the same subject being taught when assessing the impact of master's degrees on teacher effectiveness. Having a master's degree in English literature, for example, may not improve a teacher's ability to teach twelfth grade history. Furthermore, having a master's degree in education will not necessarily promote a teacher's effectiveness in teaching eighth grade mathematics. We can conclude that master's degrees are only a rough indicator of teacher effectiveness.

Different studies may reach different conclusions about the degree of influence that teacher qualifications have on student achievement, but all the studies cited by Darling-Hammond agree that teacher qualifications are related to student achievement to a lesser or greater degree. Furthermore, when teacher qualifications are combined with certification and experience, researchers have shown a significant effect on student achievement.[59]

## MEASURES TO IMPROVE TEACHER PREPARATION IN PENNSYLVANIA

The Commonwealth of Pennsylvania has started setting new standards intended to ensure higher levels of teacher preparation. Under the previous system, as noted by

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[56] R. Ferguson and H. Ladd, "How and why money matters: an analysis of Alabama schools," in H. Ladd (Ed.), *Holding Schools Accountable*. Washington, DC: Brookings Institute, 1996.

[57] D. Goldhaber and D. Brewer, "Does teacher certification matter? High school teacher certification status and student achievement, *Educational Evaluation and Policy Analysis* 22 (2000), p. 138.

[58] D. Grissmer, A. Flanagan, J. Kawata, and S. Williamson, *Improving student achievement: What NAEP state test scores tell us*. Santa Monica, CA: RAND, 2000.

[59] R. Greenwald, L. Hedges, and R. Laine, "The effect of school resources on student achievement," *Review of Educational Research* 66 (1996), 361-396; E. Armour-Thomas, C. Clay, R. Domanico, K. Bruno, and B. Allen, *An outlier study of elementary and middle schools in New York City: Final report*. New York: New York City Board of Education, 1989.

the Pennsylvania Department of Education, a person could graduate from a college of education with a "C" average, score the equivalent of an "F" on state certification exams, and receive Pennsylvania teaching certification.[60]

Pennsylvania Governor Ridge's *Teachers for the 21st Century Initiative* sets policies that raise the standard of training and content knowledge required of newly certified teachers. Students must earn a 3.0 grade point average (GPA) prior to admission into a college of education, maintain a 3.0 GPA in the academic discipline in which they plan to teach, and take the same core content courses as required to major in the discipline to be taught. The state's passing scores on the PRAXIS exams are also being raised.

In addition to raising the standards for teacher certification, Pennsylvania will also require new and veteran teachers every five years to complete either 180 hours of continuing professional education or a combination of collegiate studies, continuing professional education courses, and learning experiences equivalent to 180 hours. These requirements took effect on July 1, 2000.[61] However, the content areas and types of professional development are not specified so it is unknown whether this new requirement will ensure that teachers stay current in the subject areas they teach.

More controversially, the *Teachers for the 21st Century Initiative* has attempted to address the teacher shortage by making it easier for uncertified teachers to get their teaching licenses through an alternative certification route. The alternate route is cheaper and faster than current routes to certification. However, as *Education Week* reported in its January 2000 publication *Who Should Teach?*, the Pennsylvania State Education Association and the Pennsylvania Association of Colleges of Education and Teacher Educators sued the Commonwealth in the summer of 1999 in an attempt to block the program.

In an attempt to meet the demand for math and science educators, the *21st Century Initiative* permits candidates to get valid teaching certificates in 15 months while working in the classroom. To follow the alternative route to certification, candidates need either a bachelor's degree and a 3.0 GPA in the subject they plan to teach, or a graduate degree in that area, or a bachelor's degree plus ten years in the field. Before they can enter the classroom, these teaching candidates must also pass a six-credit-hour preparatory seminar. Candidates for alternative route certification must meet the same state standards and passing scores on the PRAXIS exams as teacher candidates prepared at Pennsylvania colleges and universities. Candidates receive certification after a 15-month apprenticeship with supervision from an experienced teacher, a school principal, or education faculty member from a teacher preparation institution.

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[60] See http://www.pde.psu.edu/certification/overview.html.

[61] Pennsylvania Department of Education, *Act 48 Professional Education Guidelines*. Harrisburg, PA: Author, 2000.

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Darling-Hammond[62] argues strongly that teachers who enter the profession via alternative routes to certification, such as that in Pennsylvania, are less effective at promoting student achievement and are more likely to leave the profession by their third year. However, Goldhaber and Brewer[63] compared student achievement in math and science and found no difference in the achievement, all else being equal, between students whose teacher had a standard teaching credential and students whose teacher was emergency certified. They argue, "...this result should, at the very least, cast doubt on the claims of the educational establishment that standard certification should be required of all teachers."[64]

## TEACHER ATTAINMENT OF QUALIFICATIONS IN THE SCHOOL DISTRICT OF PHILADELPHIA

The 1998-1999 CPRE teacher survey asked teachers what was the highest level of qualification they had completed. We grouped the responses into four categories: bachelor's, master's only, master's and higher, and all who had at least a master's (master's total).

**TABLE 6. HIGHEST LEVEL OF QUALIFICATION OF TEACHERS AND TOTAL WITH AT LEAST A MASTER'S DEGREE IN 1998-1999, BY SCHOOL LEVEL AND SUBJECT IN SCHOOL DISTRICT OF PHILADELPHIA**

| | Bachelor's % | Master's only % | Master's and Higher % | Master's Total % |
|---|---|---|---|---|
| **Grade Level** | | | | |
| Elementary | 27 | 29 | 44 | 73 |
| Middle | 29 | 29 | 43 | 72 |
| High | 17 | 21 | 62 | 83 |
| Total | 25 | 27 | 49 | 76 |
| **Academic Subject** | | | | |
| Math | 24 | 34 | 25 | 59 |
| Science | 33 | 26 | 25 | 51 |
| Other subjects | 34 | 25 | 40 | 65 |

Source: 1998-1999 CPRE teacher survey.

Table 6 shows that one-quarter of teachers who responded to our survey had just a bachelor's degree, approximately one-quarter had a master's degree only, and almost fifty percent of teachers had a master's *and* higher degree. Seventy-six percent of teachers had at least a master's degree. High school teachers were the most highly educated: 83 percent had at least a master's and more than 60 percent had a master's

[62] L. Darling-Hammond, *Solving the dilemmas of teacher supply, demand, and standards*. Washington, DC: National Council for Accreditation of Teacher Education, 1999.

[63] Goldhaber and Brewer, "Does teacher certification matter?"

[64] Ibid, p. 141

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*and* higher degree. Approximately three-quarters of elementary and middle school had at least a master's degree.

There was little variation in teachers' level of education according to the subject taught. Math teachers were eight percent more likely than science teachers to have at least a master's degree, but one-quarter of both math and science teachers had a master's *and* higher degree. Again, this did not necessarily mean that these teachers had master's degrees in the subjects they teach.

The number of Philadelphia teachers with master's degrees far exceeds the national average. The NCES study, using data from the 1998 FRSS survey, found that virtually all public school teachers nationwide had bachelor's degrees, and nearly half (45 percent) had master's degrees. The NCES study reports that 76 percent of Philadelphia teachers have at least a master's degree, markedly higher than the national average. The NCES study also found that, nationally, high school teachers (55 percent) were most likely to have master's degrees, compared with 46 percent of middle school teachers and 40 percent of elementary school teachers. Again, the national percentages are much lower than those reported in the 1998-1999 CPRE survey of teachers in the School District of Philadelphia.

We do not know why Philadelphia public school teachers have a higher level of education than the national average. One reason might be that public school teachers in Philadelphia, on average, have more years of teaching experience than the national teaching population and, therefore, have had more time to earn master's degrees over the course of their teaching careers. Of the teachers who responded to the 1998-1999 CPRE survey, 46 percent have taught for more than 20 years; only 31 percent of teachers nationally have taught for more than twenty years.[45]

Three cautions are necessary when reviewing the teacher qualifications data presented in Table 6. First, we do not know if the master's degrees are in education or in a specific subject. If the latter, we do not know if teachers have master's degrees in the subjects they are teaching. Second, the college degree held by a teacher is probably a very poor proxy for teacher knowledge. If a teacher has been teaching for 20 years, as is the case for about 46 percent of the District's teachers, their college degree is likely of little relevance at that distance. Third, the distribution of well-qualified teachers across the system is perhaps more important than the overall level of qualification in the District.

[45] R. Ingersoll, *Teacher quality and educational inequality*. Paper presented at the American Sociological Association Conference, Washington DC, August 2000. Based on analysis of 1993-1994 SASS database.

## TEACHER QUALIFICATIONS AND STUDENT CHARACTERISTICS

Given the relationships between student poverty, minority enrollment, and out-of-field teaching discussed earlier in this report, we also wanted to discover if similar relationships existed between the ethnicity and income of students in a school and the percentage of teachers with a master's degree. The correlation is presented in Table 7.

Table 7 shows that there is a significant negative correlation between the percentage of low-income students in a school and the percentage of teachers having a master's or higher degree. That is, the higher the proportion of low-income students, the lower the proportion of teachers having advanced degrees. By contrast, there is a positive correlation between the proportion of White students in a school and the proportion of teachers having advanced degrees. The greater the percentage of White students in a school, the greater the proportion of teachers with master's or higher degrees. This finding is consistent with the NCES study that found that "...teachers in schools with higher concentrations of poverty were generally less likely to have master's degrees than were teachers in schools with low concentrations of poverty."[68]

**TABLE 7. CORRELATION MATRIX SHOWING RELATIONSHIP BETWEEN TEACHERS WITH A MASTER'S OR HIGHER DEGREE AND PERCENTAGE OF LOW-INCOME AND WHITE STUDENTS IN SCHOOLS IN THE SCHOOL DISTRICT OF PHILADELPHIA, 1998-1999**

| | Students | |
|---|---|---|
| Teachers | % Low income | % White |
| % of teachers with a master's or higher degree | -.40** | .39** |

NOTE. ** $p < .01$. Percent low-income was based on 1998-1999 District data on the percent of students from low-income families. Percent White was based on 1998-1999 District data on the percent of students who are Caucasian.

[68] National Center for Education Statistics, *Teacher quality: A report on the preparation and qualifications of public school teachers*. Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement, 1999, p. 10.

# TEACHER EXPERIENCE

In her overview of the relationship between teacher experience and student achievement, Darling-Hammond[67] reports that there are a number of studies that have found a positive relationship, "but not always a significant one or an entirely linear one." In general, some studies confirm that inexperienced teachers (those with less than three years of experience) tend to be less effective than more experienced teachers, but the benefits of experience tend to plateau after about five years. Darling-Hammond suggests this may be because veteran teachers do not continue to improve their practice or because they become less motivated. She also notes that well-prepared teachers who are graduates of five-year teacher education programs can be highly effective teachers from the outset.

## TEACHER EXPERIENCE AND MOBILITY WITHIN THE DISTRICT

The number of years of experience provides an indicator of teacher effectiveness, but a more important indicator is the turnover of new teachers in a school. The 1998-1999 CPRE teacher survey asked teachers a series of questions about their teaching experience: How long have they been teachers? How long have they taught in the School District of Philadelphia? How long have they been teaching in their current schools? We divided the responses into three categories: those in their first year of teaching, those teaching for five or fewer years, and those with more than 20 years of teaching experience. The results are presented in Table 8.

**TABLE 8. PERCENT OF TEACHERS IN FIRST YEAR OF TEACHING, WITH FIVE OR FEWER YEARS OF TEACHING, OR MORE THAN 20 YEARS TEACHING IN CURRENT SCHOOL, AND IN TOTAL, 1998-1999, SCHOOL DISTRICT OF PHILADELPHIA**

| | First Year Teaching % | | 5 or Fewer Years Teaching % | | Over 20 Years Teaching % | |
|---|---|---|---|---|---|---|
| | In this school | In total | In this school | In total | In this school | In total |
| Elementary | 17 | 6 | 48 | 22 | 12 | 45 |
| Middle | 19 | 7 | 51 | 29 | 6 | 28 |
| High | 15 | 4 | 44 | 15 | 17 | 61 |
| Total average | 16 | 6 | 48 | 21 | 13 | 46 |

Overall, only six percent of teachers who responded to our survey said this was their first year of teaching, but 16 percent of teachers said they were new to their schools. High schools had the smallest percentage of teachers in their first year of teaching. Middle schools had the highest percentage of first-year teachers, and almost one-fifth of middle school teachers said they were new to their schools in the 1998-

[67] Darling-Hammond, "Teacher quality and student achievement," p. 6

1999 school year. This means that about one in five middle school teachers are new to the school each year. This signals an extraordinarily high level of teacher turnover in middle schools. The percentage sof teachers new to their elementary and high schools were also relatively high. [A recently released study by the Philadelphia Education Fund indicates that an even greater percentage of teachers are new in high-poverty schools each year.]

About one-half (48 percent) of all respondents had taught for five or fewer years in their current schools and about one-fifth of teachers (21 percent) had taught for five or fewer years in total. Once again, middle school teachers were the most likely to have been teaching in the school for five or fewer years and to have been teaching for five or fewer years in total.

Even veteran teachers do not tend to stay in one school for a long time. While 46 percent of teachers reported they had been teaching for more than 20 years, only 13 percent of this group had been teaching in their current school for more than 20 years. Mobility was highest among middle school teachers. Only six percent of middle school teachers had taught in their current schools for more than 20 years, compared to 17 percent of high school and 12 percent of elementary school teachers.

High school teachers were the most experienced in the District: 61 percent had taught a total of more than 20 years. Forty-five percent of elementary school teachers and only 28 percent of middle school teachers had taught a total of more than 20 years. Once again, our results indicate that middle schools have the least experienced teachers and the highest levels of teacher turnover.

Philadelphia can claim a disproportionate share of the most experienced and the least experienced teachers in comparison to other districts in the United States. National data[68] show that the percentage of first-year teachers in Philadelphia public schools is higher than the national average. Six percent of the District's teachers were in their first year of teaching in 1998-1999, compared with 4.5 percent nationally according to 1993-1994 SASS data. The 46 percent of Philadelphia teachers with a total of more than 20 years' teaching experience in public schools is far greater than the national average of 31 percent.

## RELATIONSHIP BETWEEN TEACHER EXPERIENCE AND SCHOOL DEMOGRAPHIC VARIABLES IN THE SCHOOL DISTRICT OF PHILADELPHIA

We used 1998-1999 CPRE teacher survey responses to explore the relationship between the percentage of low-income and White students in a school and teacher experience. Results of our analysis are presented in Table 9 below.

[68] Ingersoll, *Teacher quality and educational inequality.*



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Our analysis found a significant positive relationship between the percentage of low-income students in a school and the percentage of first-year teachers or those with five or fewer years of experience. In other words, students in schools with the greatest number of low-income students were the *most likely* to be taught by teachers who were either in their first year of teaching or had taught a total of five or fewer years. Students in low-income schools were also the *least likely* to be taught by teachers who had taught for more than 20 years.

**TABLE 9. CORRELATION MATRICES**

| School-Level Variable | % Low-Income | % White |
|---|---|---|
| **School Teaching Experience** | | |
| % teachers in their first year of teaching | .14* | -.17** |
| % teachers with 5 or fewer years of teaching experience | .27** | -.29** |
| % teachers with over 20 years teaching experience | -.18** | .29** |
| **Overall Teaching Experience** | .31** | -.30** |
| % teachers in their first year of teaching | | |
| % teachers with 5 or fewer years of teaching experience | .51** | -.48** |
| % teachers with over 20 years teaching experience | -.61** | .54** |

Note: N = 237 schools. * $p < .05$. ** $p < .01$. Percent of low-income students was based on 1998-1998 District data for percent of students from low-income families. Percent of white students is the proportion of White students enrolled in the District in 1998-1999.

Similarly, there was also a significant negative relationship between the percentage of White students in a school, the percent of first-year teachers, and the percent of teachers with five or fewer years of experience. This means that students in schools with high percentages of students of color were *more likely* to be taught by teachers who were either in their first year of teaching, or had five or fewer years of total teaching experience. Students in schools with a high percentage of White students were *more likely* to be taught by teachers who had a total of more than 20 years of teaching experience.

As our earlier analysis of the correlation between teacher experience and low-income and White students would suggest, schools with the highest percentage of new teachers serve the poorest students and have the greatest proportion of students of color. Simply put, schools with higher percentages of poor and minority students are more likely to have less experienced teachers.

## TEACHER MOBILITY AND STABILITY

We can compare our findings with the findings of a study of teacher mobility undertaken by the School District of Philadelphia.[69] Offenberg and Xu[70] conducted the

[69] The School District of Philadelphia, "Teacher transfers and faculty stability." Internal memorandum. Philadelphia: Author, 1999. Analysis carried out by Bob Offenberg and Max Xu.

[70] Offenberg and Xu, *Teacher mobility*.

1999 study for the District, examining the issue of teacher experience in relation to the broader issues of teacher transfers and faculty stability. Their analysis covered all District schools for the four-year period from 1996 to 1999. They looked at the number of teachers new to each school after 1995 and the number of teachers who transferred to the school after 1995.

Offenberg and Xu based their study on 7,049 of the 11,000 teachers working in Philadelphia public schools at that time. They analyzed the files of approximately 7,000 teachers who taught in the district continuously between September 1991 and December 1998 and were therefore eligible for voluntary transfer throughout the four years under study. The aim of the study was to examine mobility patterns within the District, rather than to analyze the teaching population as a whole. The findings of the District study are presented in Table 10.

**TABLE 10. PERCENT OF NEW TEACHERS OVER FOUR YEARS, SCHOOL DISTRICT OF PHILADELPHIA, 1996-1999**

| | New to school | New teachers as a % of total teachers in school | % of teachers who moved (compared to total population) |
|---|---|---|---|
| Elementary | 41 | 37 | 41 |
| All K-8 schools | 36 | 15 | 12 |
| Middle | 37 | 17 | 20 |
| High | 35 | 26 | 23 |
| Other | N/A | 4 | 3 |
| Average | 38 | 100* | 100* |

Source: School District of Philadelphia.
*Numbers may not add to 100 due to rounding.

The District study drew the following conclusions. The average percentage of teachers who were new to the schools over the four-year period was 41 percent in elementary schools, 37 percent in middle schools, and 35 percent in high schools.[71] These averages, however, convey only part of the picture. The analysis of teacher mobility by school showed that individual schools had a wide variation in the percentage of new teachers.

The percentage of teachers new to their elementary schools between 1996-1999 ranged from six percent to 83 percent. The percentage of middle school teachers new to their schools ranged from 13 percent to 61 percent and the percentage of teachers new to their high schools ranged from 22 percent to 64 percent. (These figures are not shown in Table 10.) These wide ranges show that some schools have extraordinarily high levels of teacher turnover, while other schools experienced remarkably little turnover.

[71] In the CPRE study, 16 percent were new to their schools. The percentage is lower because our study only covered one year.

## THE REASONS FOR TEACHER MOBILITY

Based of the analysis of voluntary and involuntary transfers conducted by Offenberg and Xu, the District[72] concluded that teacher transfers were related to school achievement and their student enrollment:

> *The analysis of transfers over the past four years provides empirical evidence that when teachers move, they typically leave schools that are achieving less well, that serve students from poorer backgrounds, and that serve greater proportions of African American and Latino students, to move to schools that have higher achievement levels, less poverty, and greater proportions of White and Asian students. This results in generally less experienced faculties in schools that have lower achievement levels, and greater proportions of African American and Latino students than in schools that have higher achievement levels, lower poverty, and greater proportions of White and Latino students.*[73]

This finding is consistent with our study that showed that low-income minority students were the most likely to be taught by inexperienced teachers and to experience the highest levels of teacher turnover.

A comparison of voluntary and involuntary teacher transfers shows that this pattern is the same for both types of transfers. That is, voluntarily and involuntarily transferred teachers move to schools with higher achievement levels, less poverty, and greater proportions of White and Asian students. This finding suggests that the District's transfer policies directly or indirectly exacerbate the unequal distribution of teachers, and implies that a change in policy may help to change the transfer patterns.

## TEACHER TURNOVER NATIONALLY

Ingersoll[74] uses the 1994-1995 SASS and TFS databases to provide a national profile of teacher turnover. He distinguishes between what he calls *attrition* (those who leave the occupation of teaching altogether) and *migration* (those who transfer or move to different teaching jobs in other schools). Teacher turnover is the sum of attrition and migration. Ingersoll found that the national rate of teacher turnover was 14 percent. His findings of turnover rates in relation to length of time teaching are presented in Figure 3.

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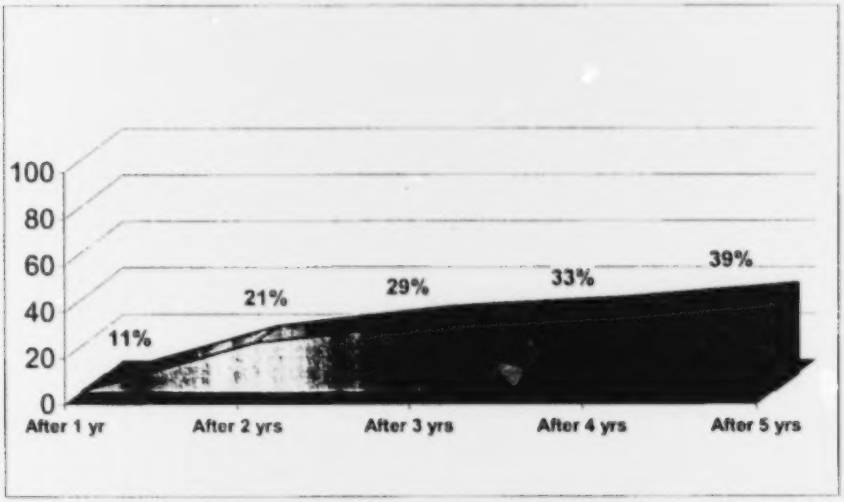
[72] School District of Philadelphia, "Teacher transfers and faculty stability." Unpublished memo. Philadelphia: Author, 1999.

[73] Ibid, p. 2.

[74] Ingersoll, *Turnover among mathematics and science teachers in the U.S.*

Ingersoll explains, "... after just three years, 29 percent of all beginning teachers have left teaching altogether, and after five years, fully 39 percent have left teaching."[75]

**FIGURE 3. CUMULATIVE FIRST-YEAR TEACHER ATTRITION**




We do not have similar data for Philadelphia public school teachers, but if we assume District attrition rates at least equal to Ingersoll's national findings, then attrition is an important contributor to teacher turnover and the teacher shortage in Philadelphia. Ingersoll explains: "Teacher turnover is a significant phenomenon and a dominant factor driving demand for new teachers. The data show that, while it is true that student enrollments are increasing, the demand for new teachers is primarily due to teachers moving from or leaving their jobs at relatively high rates."[76] Ingersoll argues that the major policy response to the teacher shortage should not be increasing the supply of teachers, but improving retention of the existing teaching force.

Ingersoll's research (using the SASS and TFS databases) on the reasons for teacher turnover is consistent with the District's finding. Ingersoll compares teacher turnover between schools in relation to a number of school-level factors. He finds that "there is a strong flow of teachers from less desirable to more desirable schools. For example, schools with low salaries, student discipline problems, and little faculty input into school decision-making tend to lose teachers to schools without these problems."[77] His analysis suggests there are strategies that schools can use to reduce

[75] Ibid, p. 6

[76] Ibid, p. 10

[77] Ibid, p. 9



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teacher turnover, such as improving conditions of teaching within schools and decentralizing decision-making to teachers where possible. Raising teacher salaries is also likely to reduce turnover in the District. A January 2000 *Philadelphia Inquirer*[78] article reported that teachers' starting salaries in the Philadelphia public schools are about $30,000 per year, compared with an average of $34,000 beginning salary for teachers in suburban districts. According to data made available by the Pennsylvania Department of Education in 1999-2000[79] average teacher salaries for public school teachers in Philadelphia are $1,872 lower than the average for public school teachers in Pennsylvania.

[78] Mezzacappa, "Report shows city hurting for teachers even more than most."

[79] Pennsylvania Department of Education, *Public schools professional personnel report 1999-2000*. Harrisburg, PA: Author, 2000.

# SCHOOL-LEVEL ANALYSIS OF TEACHER QUALITY INDICATORS

In this section we examine in greater detail the relationship between the percentage of minority and low-income students in a school, and the teacher quality indicators discussed in this report. To undertake this analysis, we divided the Philadelphia public schools into two groups. First, we selected schools in which 85 percent or more of students were low-income and fewer than 15 percent of the students were White. These are identified as High/High in Table 11 because they are *high-poverty* and *high-minority* schools. Second, we selected schools in which no more than 19 percent of students were low-income and more than 21 percent of the students were White.[80] These are identified as Low/Low because they are *relatively low-poverty* and *low-minority* schools.

Table 11 shows that 83 of the District's 164 elementary schools fall into the high-poverty/high-minority group and 37 elementary schools fall into the low-poverty/low-minority group. Nineteen of the 37 middle schools in the District fall into the high-poverty/high-minority group and seven middle schools into the low-poverty/low-minority group. Of the 36 high schools in the District, six fall into the high-poverty/high-minority group and 11 fall into the low-poverty/low-minority group.

We used data from the 1998-1999 CPRE teacher survey to determine for each of these groups of schools the average number of years of teacher experience, the percentage of teachers with master's or higher degrees, and the percentage of teachers certified in their major teaching field.

Table 11 shows that schools with high proportions of low-income and minority students have fewer teachers with higher indices of teacher quality. Middle schools with high proportions of low-income and minority students have teachers who score less well on all but one quality indicator (teachers with five or fewer years of experience in the school) compared to other schools. Middle schools with high proportions of low-income and minority students have the highest percentage of first-year teachers and teachers with five or fewer years of total teaching experience. These same middle schools also have the lowest percentage of teachers with more than 20 years of experience and the lowest percentage of teachers with a master's or higher degree.

[80] The proportions chosen to determine which schools fell into the high/high and low/low categories were created by developing a 95 percent confidence interval for the mean of each of the two categories. The confidence interval for low income is between 81-85 percent and the confidence interval for white students is between 15 and 21 percent.

## TABLE 11. COMPARING TEACHER EXPERIENCE, EDUCATION AND CERTIFICATION VARIABLES IN HIGH-POVERTY/HIGH-MINORITY SCHOOLS WITH LOW-POVERTY/ LOW-MINORITY SCHOOLS, 1998-1999

| | | | Mean Percentages – Teacher Characteristics | | | | | |
|---|---|---|---|---|---|---|---|---|
| School Level | Poverty/ Minority Group | Schools | First Year Teachers % | Five or Fewer Years of Total Teaching Experience % | Over 20 Years of Experience % | Five or Fewer Years of Experience in the school % | Master's or Higher Degree % | Pennsylvania Certification in Major Field % |
| Elementary | High/High | N = 83 | 7 | 28 | 34 | 53 | 68 | 91 |
| | Low/Low | N = 37 | 3 | 7 | 69 | 38 | 85 | 90 |
| Middle | High/High | N = 19 | 8 | 30 | 29 | 50 | 68 | 79 |
| | Low/Low | N = 7 | 1 | 20 | 51 | 39 | 69 | 79 |
| High | High/High | N = 6 | 5 | 22 | 51 | 45 | 81 | 96 |
| | Low/Low | N = 11 | 3 | 9 | 71 | 41 | 88 | 98 |
| TOTAL | High/High | N = 108 | 7 | 28 | 34 | 52 | 68 | 89 |
| | Low/Low | N = 55 | 3 | 9 | 67 | 39 | 84 | 91 |

Note: The High/High group includes schools that meet both the criteria for high-poverty/high-minority schools in Philadelphia (>85% low income AND <15% White). The Low/Low group includes schools that meet both the criteria for low-poverty/low-minority schools in Philadelphia (<81% low income AND >21% White). N is the number of schools that meet the criteria in each category. Data is derived from District records and the 1998-99 CPRE Survey of Philadelphia Teachers.

In some cases, the disparities between schools based on the proportion of low-income and minority students are very large. The second column in Table 11 shows the percentage of teachers with five or fewer years of total teaching experience. Elementary schools with high proportions of low-income, minority students are at least 20 percent more likely to have teachers who have taught five or fewer years than schools with fewer low-income and minority students. Middle and high schools with high proportions of minority- and low-poverty students also have less experienced teachers than schools with lower proportions of low-income and minority students.

There is also a difference in the proportion of teachers with a master's or higher degree in schools with different proportions of low-income and minority students. The difference is greatest in elementary schools where high-poverty and high-minority schools have fewer teachers with master's or higher degrees. The difference is less pronounced for high schools that, overall, have the most highly-qualified teachers. In middle schools, there is almost no difference in the proportions of teachers with a master's or higher degree, but middle schools have the overall lowest proportions of well-qualified teachers.

There is a difference in the percentage of teachers who are certified in their main teaching field at all school levels. Schools with a high proportion of low-income and minority students have a lower percentage of teachers certified in their main teaching field, but the differences are very small.

Overall, Table 11 shows that low-income and minority students have the least experienced, least qualified teachers, and attend schools with the highest rates of teacher mobility. Schools with high proportions of low-income and minority students are also less likely to have teachers who are certified in their main teaching field. If these indicators of teacher quality are related to teacher effectiveness and student achievement (as a number of researchers have shown), these findings are of considerable concern. It is important that students have equal learning opportunities as they face increasingly higher stakes based on their performance on standardized tests. This report suggests that low-income and minority students have the least access to the positive effects teacher quality can have on student achievement.

## UNEQUAL DISTRIBUTION OF QUALITY TEACHERS

Our discussion in the preceding sections of this report suggests a number of complex and inter-related reasons for the unequal distribution of teachers in Philadelphia. There is an overall shortage of teachers willing to work in middle schools. Useem identifies several possible reasons for this. First, because of the shortage of training programs for middle school teachers, very few teachers are adequately prepared to teach at this level, and teachers who are not well prepared are more likely to leave. Second, because there are not enough teachers trained or willing to teach in middle schools, teachers are often assigned to middle schools who do not want to be there. Ingersoll's research has shown that job dissatisfaction is a major source of teacher turnover. Useem found that almost half of the newly-hired Philadelphia seventh and eighth grade teachers she surveyed were unhappy with their grade placement.

Several factors contribute to the higher rates of teacher turnover, lower rates of experienced faculty, and lower percentages of teachers with master's or higher degrees in schools with greater numbers of low-income and minority students. In addition to teacher turnover and the other reasons pertaining to middle schools, we have discussed a number of other contributing factors. First, District data show that when teachers are eligible to transfer, they typically leave schools serving poorer and minority students with lower levels of achievement. Furthermore, the analysis by Offenberg and Xu suggests that the District's voluntary and involuntary transfer policies directly or indirectly exacerbate teacher turnover and result in greater proportions of less experienced teachers in the abandoned schools. Ingersoll shows that there are other school-level factors contributing to teacher turnover: teachers leave schools with lower salaries, greater student discipline problems, and little faculty input into school decision-making.

## RELATIONSHIP BETWEEN TEACHER QUALITY INDICATORS, SCHOOL-LEVEL LEARNING SUPPORT, AND STUDENT ACHIEVEMENT

The evaluation team used the 1998-1999 CPRE teacher survey and achievement data provided by the District to explore the relationship between teacher qualifications and experience, certain school-level factors, and student achievement. Up to this point, this report has documented the distribution of teachers according to certain quality indicators. Using two statistical analysis tools, Hierarchical Linear Modeling (HLM) and Logistic Regression Analysis, we have established a relationship between teacher experience and teacher qualifications and certain school-level factors that are positively related to student achievement.

We used HLM analysis to show that schools with the highest proportions of low-income students had the lowest achievement when the District initiated its *Children Achieving* reform in the 1995-1996 school year. Poverty, however, has also been associated with achievement growth, so the poorer schools experienced significantly greater growth in the percentage of students scoring above the Basic Level on the Stanford-9 Achievement Test between 1996 and 1999. These analyses revealed that distributed leadership (such as principal leadership, teacher leadership, and teacher-principal relationships) was significantly related to the rate of growth in student achievement scores. (See Appendix A for a detailed explanation of HLM procedures.)

The second step in our analysis was to use logistic regression to determine the likelihood that schools with particular characteristics would have poor achievement scores. Using the entire fourth grade sample, we found that higher poverty, larger school size, less distributed leadership, and lower teacher qualifications significantly increased the odds of children scoring below the mean in reading achievement. Among schools in extreme poverty, we found that lower teacher qualifications and less distributed leadership significantly increased the chance of students scoring below the mean in reading achievement.

In these analyses, we compared teachers having a bachelor's degree with those having a master's degree. These results indicate that schools with a higher proportion of teachers having master's degrees were more likely to be schools with higher levels of student achievement. Furthermore, high-poverty schools with higher proportions of teachers having master's degrees were more likely to have higher student achievement. This is cause for concern because we found that high-poverty schools were less likely to have teachers with master's or higher degrees. The proportion of teachers having master's degrees increases the likelihood that schools will have higher student achievement, but high-poverty schools have fewer teachers with master's degrees. It also suggests that improving the qualifications of teachers in high-poverty schools is likely to have a positive impact on student achievement, provided that teachers are teaching the grade levels and subjects for which they are qualified.

The third step in our analysis was to use logistic regression to examine the relative import of teacher experience and teacher qualifications on school safety, school instructional obstacles, and distributed leadership — three factors that we have found to be related to student achievement. We wanted to examine the relationship between certain teacher quality indicators and specific school conditions that we knew were related to student achievement. Using the entire fourth grade sample, we identified the following patterns.

- Teachers with master's degrees were more likely to be teaching in safer schools and in schools with fewer instructional obstacles than teachers with bachelor's degrees.

- Teachers with six to 11 years of experience in the District were more likely to work in schools with more distributed leadership than were first-year teachers.

- Teachers with more than 10 years of experience in the District were more likely to work in safer schools, with less instructional obstacles, and more distributed leadership compared to first-year teachers.

- Among the highest poverty schools, teachers with master's or higher degrees were more likely to work in schools with fewer instructional obstacles than those with just bachelor's degrees

In sum, our statistical analyses have revealed the importance of teacher qualifications and experience at the school level. These patterns may not be immediately apparent in less sophisticated forms of analysis. First, schools with a higher proportion of teachers having master's degrees were more likely to have higher student achievement, to be safer, to have fewer instructional obstacles, and to have more distributed leadership. Second, schools with more experienced teachers were more likely to be safer, to have more distributed leadership, and have fewer instructional obstacles. Among schools with the highest levels of student poverty, the schools with more teachers having master's degrees were more likely to have higher student achievement and fewer instructional obstacles.

These findings show us that teachers who are more qualified and experienced are more likely to work in safer schools with fewer instructional obstacles and more distributed leadership, but they do not tell us why this is so. It may be that more qualified and experienced teachers transfer to these kinds of schools. The District's analysis of teacher transfer data would seem to support this conclusion. It may be that these schools have more favorable working conditions and, therefore, less teacher turnover which results in more experienced and qualified teachers. Finally, it may be that more qualified and experienced teachers contribute to creating safer schools with fewer instructional obstacles and more distributed leadership.

Whichever of these may be true (and it may be that they all are to some extent), these findings suggest that raising teacher qualifications and increasing teacher

experience are important factors in improving school safety, removing instructional obstacles, and increasing distributed leadership within schools. These results may be fostered in different ways, including reducing teacher turnover, creating incentives for more highly qualified and experienced teachers to stay in or transfer to high-poverty schools, and changing District transfer policies to stem the flow of teachers from high-poverty schools.

# CONCLUSIONS

The purpose of this report has been to present new findings from the CPRE teacher survey and from existing District, state, and national studies in order to provide an introduction to the issue of teacher quality in the Philadelphia public schools.

To our knowledge, there is no existing study that provides an overview of this issue and draws on findings from state and national studies to inform an analysis of teacher quality in Philadelphia. An ongoing and pressing concern for the District is the shortage of teachers. We have shown that the shortage is not due to a shortage of trained teachers in the region. Rather the shortage is due to two key factors: many graduates do not want to teach in the District's schools, and the high levels of teacher turnover forces the District to continually replace the teachers exiting the system. Furthermore, we have shown that the shortage of teachers does not affect all schools equally. Middle schools and schools with the highest proportions of low-income and minority students are disproportionately affected by the teacher shortage and by high rates of teacher turnover.

This report also raises concerns about the quality of teachers currently teaching in the District. Philadelphia has a large percentage of experienced teachers, but the newly hired teachers have, on average, the lowest PRAXIS scores of 16 metropolitan areas in Pennsylvania. The District's most disadvantaged schools are middle schools which have almost no teachers trained to teach at that level. Middle school students are also most likely to be taught by emergency-certified teachers. This finding raises the question of how teachers who have been certified to teach K-6 students can develop the expertise required to become seventh and eighth grade subject specialists. In the current standards-based environment, students face increasingly high stakes and it is vital that they have teachers with the subject and grade-level expertise to assist them in meeting these standards. In addition, roughly half of the District's ninth grade students fail to meet promotion standards for tenth grade. This is a painful reminder of the price of not remedying this situation.

The CPRE evaluation team's research and the results of other studies show that low-income and minority students are least likely to be taught by teachers who are certified in their main teaching field, who have a college major or minor in their main teaching field, who have a master's degree, and who are experienced. Low-income and minority students are also the most likely to have high levels of teacher turnover in their schools and to be taught by first-year teachers. Reducing misassignment and out-of-field teaching and raising teacher qualifications overall is likely to influence teacher quality, particularly in schools that are currently hard to staff.

In general, as teachers enter the profession better prepared, and teach the grade levels and subjects for which they have been trained, student achievement rises,

student discipline problems decline, teacher satisfaction rises, and teacher turnover and attrition are reduced. In turn, these improvements would serve to decrease the number of new teachers required and would make teaching in the District more attractive to new teachers. It is important to understand the relationship between improved teacher training, teacher qualifications and teacher assignments, and the teacher shortage. The School District of Philadelphia, and its school principals, must be careful not to sacrifice quality for quantity in the current rush to address the serious teacher shortage.

Our intention in this report has been to provide the empirical data that accurately documents key issues regarding teacher quality. First, we wanted to show that the District faces serious problems in providing students with equitable access to the learning opportunities that quality teachers provide. Second, we wanted to draw attention to areas needing further research. Finally, we wanted to provide information that will assist stakeholders at different levels in developing and implementing strategies to improve teacher quality in the public schools of Philadelphia.

# APPENDIX A

## HIERARCHICAL LINEAL MODELING

Hierarchical linear modeling (HLM) has been identified as an effective method of analyzing multi-level data structures.[81] In essence, HLM is a procedure that looks at the relationships between data on multiple levels. HLM analysis adheres to the assumptions of linear regression, and involves a complex set of equations in an attempt to understand how influences from different levels can affect a given outcome. In this case, the evaluation team used HLM to look at the relationship between teacher characteristics (such as teacher collaboration and distributed leadership), school-level characteristics (low-income status, for example) on the initial status of student achievement in school, and on the growth in student achievement scores over the years of the reform process. A detailed description of procedures, statistical models, and findings of the HLM analysis for the *Children Achieving* reform initiative is in production and is scheduled for release in 2001.

## MULTIPLE LOGISTIC REGRESSION ANALYSIS

Logistic regression is a useful procedure that allows us to look at the relative *relationship* of each independent variable on student achievement while controlling for *all other* independent variables in the analysis. Specifically, logistic regression is a regression procedure used when the outcome or dependent variable is categorized into two groups (such as average or above the mean reading score versus below the mean reading score). In essence, logistic regression allows the researcher to calculate the probability of one of the two outcome groups (for example, below the mean in reading) based on whether or not certain independent variable characteristics are present (for example, a school with low distributed leadership). In this procedure, the *odds ratio* is a practical statistic that provides an index for interpreting the relative likelihood of classification in a specific outcome group based on having or not having a specific characteristic. A detailed description of procedures, statistical models, and findings of the logistic regression analysis for the *Children Achieving* reform initiative is in production and scheduled for release in 2001.

[81] S. Raudenbush, A. Bryk, Y. Cheong, and R. Congdon, *HLM5: Hierarchial linear and nonlinear modeling*. Chicago: Scientific Software International, 2000.

# APPENDIX B

## COMPARISON OF PHILADELPHIA/SUBURBAN AVERAGE TEACHER SALARIES, PENNSYLVANIA DEPARTMENT OF EDUCATION PROFESSIONAL PERSONNEL REPORT, 1999-2000[82]

| Delaware | # Teachers | Av. Salary | Total |
|---|---|---|---|
| Chester-Upland | 416 | $42,621 | $17,730,336 |
| Chichester | 240 | $52,705 | $12,649,200 |
| Garnet Valley | 215 | $49,656 | $10,676,040 |
| Haverford Twp | 314 | $55,181 | $17,326,834 |
| Interboro | 234 | $60,403 | $14,134,302 |
| Marple-Newtown | 256 | $56,841 | $14,551,296 |
| Penn-Delco | 190 | $50,604 | $9,614,760 |
| Radnor | 252 | $61,752 | $15,561,504 |
| Ridley | 377 | $53,381 | $20,124,637 |
| Rose Tree Media | 279 | $54,726 | $15,268,554 |
| Southeast Delco | 237 | $55,166 | $13,074,342 |
| Springfield | 224 | $47,480 | $10,635,520 |
| Upper Darby | 678 | $50,514 | $34,248,492 |
| Wallinford-Swarthmore | 255 | $55,947 | $14,266,485 |
| Wm. Penn | 327 | $51,546 | $16,855,542 |
| **TOTAL** | **4494** | **$798,523** | **$236,717,844** |
| | | **County Average** | **$52,674** |

| Chester | # Teachers | Av. Salary | Total |
|---|---|---|---|
| Avon Grove | 246 | $46,998 | $11,561,508 |
| Coatesville Area | 506 | $44,527 | $22,530,662 |
| Downingtown | 644 | $48,140 | $31,002,160 |
| Great Valley | 229 | $57,297 | $13,121,013 |
| Kennett Consolidated | 215 | $49,748 | $10,695,820 |
| Octorara | 170 | $49,165 | $8,358,050 |
| Owen Roberts | 252 | $51,037 | $12,861,324 |
| Oxford Area | 183 | $43,979 | $8,048,157 |
| Phoenixville | 217 | $40,831 | $8,860,327 |
| Tredyffrin-Easttown | 348 | $60,604 | $21,090,192 |
| Unionville-Chadds Ford | 236 | $55,567 | $13,113,812 |
| West Chester | 712 | $56,377 | $40,140,424 |
| **TOTAL** | **3958** | **$604,270** | **$201,383,449** |
| | | **County Average** | **$50,880** |

[82] Information compiled by Jane Century.

| Bucks | # Teachers | Av. Salary | Total |
|---|---|---|---|
| Bensalem | 406 | $65,726 | $26,684,756 |
| Bristol Borough | 83 | $56,184 | $4,663,272 |
| Bristol Twp | 477 | $57,256 | $27,311,112 |
| Centennial | 384 | $56,071 | $21,531,264 |
| Central Bucks | 903 | $59,605 | $53,823,315 |
| Council Rock | 648 | $76,560 | $49,610,880 |
| Morrisville | 68 | $59,827 | $4,068,236 |
| Neshaminy | 575 | $67,712 | $38,934,400 |
| New Hope - Solebury | 80 | $59,247 | $4,739,760 |
| Palisades | 130 | $62,971 | $8,186,230 |
| Pennridge | 376 | $59,127 | $22,231,752 |
| Pennsbury | 689 | $64,713 | $44,587,257 |
| Quakertown | 261 | $66,941 | $17,471,601 |
| **TOTAL** | **5080** | **$811,940** | **$323,843,835** |
| | | **County Average** | **$63,749** |

| Montgomery | # Teachers | Av. Salary | Total |
|---|---|---|---|
| Abington | 447 | $56,865 | $25,418,655 |
| Cheltenham | 334 | $63,110 | $21,078,740 |
| Colonial | 321 | $58,948 | $18,922,308 |
| Hatboro - Horsham | 326 | $57,804 | $18,844,104 |
| Jenkintown | 50 | $60,069 | $3,003,450 |
| Lower Merion | 492 | $65,000 | $31,980,000 |
| Lower Moreland | 107 | $64,716 | $6,924,612 |
| Methacton | 328 | $50,800 | $16,662,400 |
| Norristown | 473 | $50,603 | $23,935,219 |
| North Penn | 827 | $59,582 | $49,274,314 |
| Perkiomen Valley | 238 | $50,742 | $12,076,596 |
| Pottsgrove | 201 | $55,483 | $11,152,083 |
| Pottstown | 208 | $49,136 | $10,220,288 |
| Souderton | 375 | $55,873 | $20,952,375 |
| Spring - Ford | 350 | $43,776 | $15,321,600 |
| Springfield Twp | 147 | $55,203 | $8,114,841 |
| Upper Dublin | 269 | $56,377 | $15,165,413 |
| Upper Merion | 235 | $63,809 | $14,995,115 |
| Upper Moreland | 190 | $57,666 | $10,956,540 |
| Upper Perkiomen | 190 | $56,704 | $10,773,760 |
| Wissahickon | 315 | $56,560 | $17,816,400 |
| **TOTAL** | **6423** | **$1,188,826** | **$363,588,813** |
| | | **County Average** | **$56,607** |

| Philadelphia | # Teachers | Av. Salary | Total |
|---|---|---|---|
| Philadelphia | 11,470 | **$46,908** | $538,034,760 |

| | Teachers | Total salaries | Suburban average |
|---|---|---|---|
| **Four-County Average** | **19,955** | **$1,125,533,941** | **$56,404** |

Wage gap between Philadelphia and Suburban Counties

Wage gap between Philadelphia and PA teachers statewide

State Average
Phila Average

**Wage gap**

**Teacher Tenure comparisons**

| | |
|---|---|
| Statewide average tenure | 15.8 years |
| Philadelphia | 12.9 years |
| Montgomery County | 14.8 years |
| Bucks County | 16.0 years |
| Chester County | 14.3 years |
| Delaware County | 14.4 years |

There were 115,673 classroom teachers in Pennsylvania in 1999-00. In 1998-99, 5,211 teachers retired (2,257 in Philadelphia) earning an average statewide of $58,501. Secondly, 5,778 full-time, first-year teachers were hired with bachelors degrees earning an average of $30,185 in 1999-00.

**Classroom teacher average salaries in PA and neighboring states for 1998-00**

| | |
|---|---|
| New Jersey | $51,692 |
| New York | $49,686 |
| Pennsylvania | $48,457 |
| Delaware | $43,223 |
| Maryland | $42,545 |

**Classroom teacher average beginning salaries in PA and neighboring states for 1998-00**

| | |
|---|---|
| New York | $30,808 |
| Delaware | $29,981 |
| Pennsylvania | $29,793 |
| New Jersey | $29,112 |
| Maryland | $27,605 |

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